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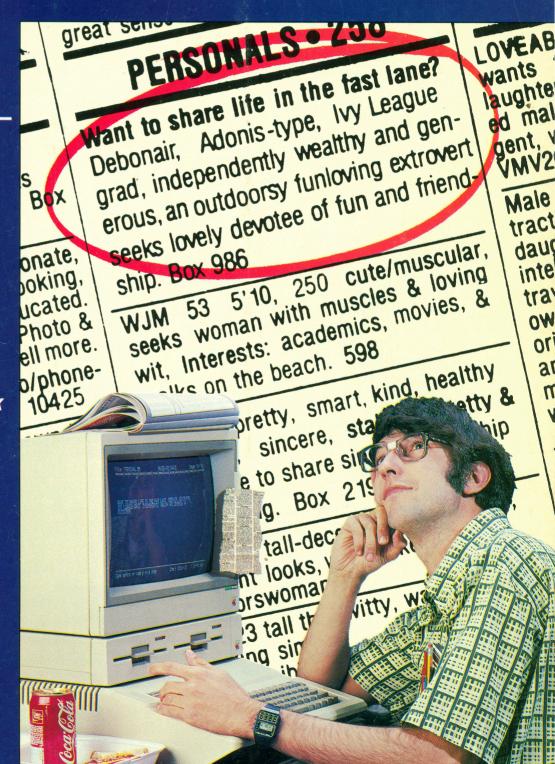
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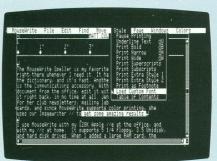
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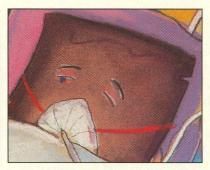
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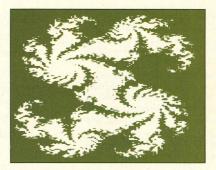
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Publisher James Capparell Editorial

DeWitt Robbeloth, Executive Editor
Anita Malnig, Editor
Frank Hayes, Assistant Editor
Michael Biancalana, Programs Editor
Heidi Brumbaugh, Editorial Assistant
Jon Randall, Editorial Clerk
Robert Grossblatt, Contributing Editor

Art & Production

Claudia Steenberg-Majewski, Art Director
Linda Tapscott, Assistant Art Director
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Advertising Sales John Taggart, Director (415) 957-0886 See page 90 for regional Advertising Representatives.

General Offices (415) 957-0886 544 Second Street, San Francisco, CA 94107

Subscription Customer Service (614) 383-3141

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EDITORIAL

Beyond Word Processing?

Word processing. The computer term most everyone—even those who've never touched a computer—knows. It gave the machine a raison d'etre and continues to do so (along, of course with other applications). Yet in this industry that doesn't sit still, we say, what's next?

Desktop publishing, that natural extension from writing words to creating a designed, publishable product, may be next. Next for Apple IIGS, that is. The Macintosh is already in the forefront, with IBM and others edging close.

What else is next? Talking word processors? A rumor on computer frontiers is of a word processor that we talk at, and it records and prints out our words. We haven't seen that yet, but Talking Text Writer, reviewed in our Word Processing feature, reads aloud the words we write.

But back to desktop publishing. In July of 1986 while preparing our "Apple Unveils the IIGS" issue, we were excited by wonderful reports of several desktop publishing systems for the IIGS. As of this writing, we're still waiting to see them. No doubt some will be terrific. But there are delays. One manufacturer is waiting for Apple to complete some necessary work, another is developing the system for the Mac first. Let's hope these are temporary snags.

Meanwhile we continue to bring you the latest IIGS product news. Software is becoming available; in fact, see our New Products department for information about a colorful graphic word processing program, as well as other exciting products.

For the record, the *II Computing* staff still uses Apple IIs—IIes and IIcs. With so much software available for these machines, we have a waiting list in our offices for who will try out what. You can read about some of this soft-



ware in our Word Processing feature. Word Perfect for the Apple is a treasure trove of features and Manuscript Manager lets academics and others meet all those exacting style standards. Young people will find a choice of straightforward, uncomplicated writing programs. Frankly, there's no end of what your Apple II can do . . . right now.

News flash! We're giving away a complete home creativity Apple IIGS system. Apple Computer, Inc. has generously donated the Apple IIGS computer with keyboard and mouse, a memory expansion card with 512K, an RGB color monitor, and two 3.5inch disk drives. A printer and some dynamite software will be supplied by other manufacturers. The winner receives everything needed to be up and running on the Apple IIGS. (No vaporware included. . .) The drawing will take place at Activision's booth at the Consumer Electronics Show in Chicago in June. There are other prizes too—see page 22 in this issue for details. Good luck to you all!//

Centa Malnig

Editor

UPGRADE POLICY

Products that are developed exclusively for The Catalog are backed by an excellent upgrade policy. Just send your current original program disk with proof of purchase and specify the revision you want. We will copy the new version directly onto the original disk. Please include \$7.00 for upgrade and handling fee. Send it to The Catalog Upgrades, 544 Second St., San Francisco, CA 94107.

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READER FORUM

CLOCKLESS TIMESTAMPING

I'm sold on *II Computing* and have requested a subscription for my birthday. You've got a different twist to things than the other magazines that makes *II Computing* more interesting than most. Thanks.

Now a request: I loved Rick Robey's Clockless Datestamping program, but would like it even better if it would also timestamp ProDOS files. I use AppleWorks quite a lot and like to have the time on files. I have been using a modified version of the time and date set routine from the ProDOS User Disk. This routine has no storage ability and so the information must be entered every time ProDOS is restarted. I tried to figure it out myself, but have not been successful. Would you please do another part to save the world from excess typing by releasing a time and date setting program that remembers?

I look forward to seeing all of you in the mailbox soon. . .

Ross McIntosh Boulder, CO

WHAT'S THE POINT?

The article "New Vistas for Disabled" by Neill S. Rosenfeld (August-September 1986) reported that David Rubin is developing software to help children read by "gulping in words at a glance." This is simply the look-say method and is largely ineffective in teaching reading.

A normal reader learns that words need to be sounded out. Hence the need to learn letter sounds, enunciation, inflection, articulation and diction. Neither does phonetic reading take all of one's cognitive capacities to sound out a word. It is after sounding out a word that a person is likely to recognize it. This develops and expands one's cognitive capacities.

The word "dog" may be "tall in the front and hangs down in the back" but

so does "bog." What's the point? Is it that every short word that is tall in the front and hangs down in the back represents a canine? Shape recognition of a word is probably the least effective of the look-say reading methods.

In special education a person may have a number of visual irregularities. For them the look-say shaperecognition method of reading is even less effective. My own experience with the shape-recognition method is that it is non-effective.

I would hope that some computereducator-programmer would write a computer program for Christian Broadcasting Network's Sing, Spell, Read & Write phonics program. It has graphic components as well as sounds (saying and singing) and would lend itself well to computer usage. Sing, Spell, Read & Write is based upon the theoretical model developed by Noah Webster in his Blue-Backed Speller of the 1800s, since revised and reissued as A Handbook for Reading. The theoretical foundation of Webster's model for teaching reading by the phonetic method has yet to be improved upon. David D. Dunn Louisville, KY

Neill S. Rosenfeld replies:

I checked with David Rubin, to ensure I'd interpreted his project accurately. I had. If Mr. Dunn has this misunderstanding of Rubin's work, I suspect other readers do as well. Mr. Dunn decribes a debate between the look-say and phonetic methods of decoding the meaning of words, but Rubin's work is directed at a level of comprehension below that.

Some children with reading disabilities have a hard time looking at a letter or collection of letters and seeing differences from another letter or collection of letters—that a *b* isn't a *d*. Rubin's software does not teach them to discriminate between a *b* and a *d* because he wants them to know that *bog* means "bog" and *dog* means "dog",

which would be a look-say decoding method. It's so that when they look at *bog* they won't *see* it as *dog*, regardless of which decoding method they use.

Yes, as Dunn notes, both *dog* and *bog* are tall in the front and hang down in the back. But at least a child with this reading disability learns that they're both different from *peg*, which hangs down in front and back. Rubin's software teaches them the salient features of letters, so they can eliminate the vast majority of three-letter words in figuring out what the word in front of them is.

Once they can tell a *b* from a *d*, they can worry how to pronounce it and how it is connected to other letters. With that threshold crossed, teachers can determine whether to use the look-say or phonetic method to teach them to link *dog* with the four-legged critter with a tail.

"We know our stuff is effective because we've measured reading speed before and after and the ability to discriminate shapes before and after," says Rubin. "These are pretty unambiguous measures of performance."

MORE MODEMS AND MACHINE CODE

A few days ago I received my second copy of *II Computing*. I would like to see some articles on telecommunications and programming in machine language. I am very satisfied with *II Computing* and I think it's the best magazine for my Apple IIe and I would recommend it to all Apple users.

Mirek Otremba Windsor, Ontario, Canada

We welcome your comments and suggestions. Address your letters to Reader Forum, II Computing, 544 Second Street, San Francisco, CA 94107.

continued on next page

READER FORUM

II BITS

Tired of typing? You probably know there's a special Action Disk version of II Computing that gives you all the type-in programs on disk, ready to use—along with special bonus programs and other features. Starting this issue, it's easier than ever to get the Action Disk if you've already bought the regular edition of the magazine. Just clip (or copy) the coupon on page 38. The Action Disk by itself is just \$10.95. . . This issue's Action Disk has two disk bonuses: a special version of this issue's type-in AppleWorks spreadsheet template for preparing your 1986 federal tax return, and the last of our free programs from Newton's Apple, a science quiz. . . If you're an Apple IIGS owner who subscribes to CompuServe, there's good news: II Computing is uploading special IIGS pictures to CompuServe's Apple forum, the Micronetworked Apple User's Group (MAUG). The pictures are located in data library 9, which is dedicated to IIGS programs, pictures and information. If you're not a subscriber to CompuServe, you can join by calling 1-800-848-8199, or (614) 457-0802 in Ohio. . . How fast is the IIGS? In our October/November issue we compared it to a IIe, with a BASIC program called SIEVE. Using similar benchmarks, the editors of the monthly newsletter Open-Apple compared the IIGS with Macintoshes and IBMs. The result: the IIGS beat everything but IBM's top-of-the-line PC AT. Subscriptions to Open-Apple are \$24 a year from P.O. Box 6331, Syracuse, NY 13217. . . More software price-cutting this month: Strategic Simulations, Inc., is now selling seven of its Apple II war, fantasy and sports games for \$14.95 each. That means new low prices for Gemstone Warrior, Computer Baseball and Galactic Gladiators, among others. . . Meanwhile, Roger Wagner Publishing has a special offer for owners of MouseWord: you can upgrade to MouseWrite for half price. MouseWord was a mouse-based Apple II word processor published by International Solutions, which has gone out of business. To get Mouse-Write, send in your MouseWord disk and manual along with \$75; Mouse-Write normally costs \$149.95. If you have an earlier version of MouseWrite, you can upgrade to the current version of the program for just \$45. For information, call Roger Wagner Publishing at 1-800-421-6526, or (619) 562-3670 in California. . . And Quicken, the personal financial software from Intuit, is dropping its price from \$79 to \$49 and eliminating copy protection. Quicken is unique in that it's endorsed and distributed by major banks in the U.S. and Canada, as well as sold through computer stores. For a 30-day trial offer, call Intuit at 1-800-624-8742 (in California, 1-800-468-8481). . . As tax time approaches, Broderbund is looking for crazy or outlandish financial management stories. The best story of crazy schemes to keep track of financial records will win their "Off the Wall" story contest and the storyteller will receive a complete Broderbund software library. Second place gets a software collection and runners-up will receive copies of On Balance, Broderbund's new personal finance program. Write for more details: Broderbund, 17 Paul Drive, San Rafael, CA 94903. . . Newsletters abound: Research in Word Processing Newsletter has reviews and articles about word processing, including some complex techniques for those who want to squeeze the most out of AppleWorks and other word processors. A one-year subscription (nine issues) is \$15; for information, write to RWPN, South Dakota School of Mines and Technology, 501 E. St. Joseph, Rapid City, SD 57701. . . For AppleWorks users, there's Home & School Works Newsletter, specially designed for those who use the Apple II's most popular program at home or school. \$19.95 a year

(ten issues) from P.O. Box 72, Leetsdale, PA 15056. . . And Terrapin, Inc., publishers of Terrapin Logo, has a free quarterly newsletter for Logo users called Terrapin Times, with short Logo programs and tips for using Logo. Write to them at 222 Third St., Cambridge, MA 02142... Think you're good at Infocom games? Teams from 20 San Francisco-area high schools spent all night last November trying to complete Infocom's new Hollywood Hijinks. The program's creator, David Anderson, estimated it would take 20 hours to solve the puzzle. The winning teams-from Amador Valley High School in Pleasanton and Contra Costa Christian High School in Walnut Creek, California – finished in just 12 hours. The competition was sponsored by Infocom and the California Academy of Sciences.

LATE NEWS:

There's a new public domain standard for uploading and downloading files and programs for the Apple IIGS, called **Binary II**. It was developed at a series of online conferences on the Apple II Forum of CompuServe's MAUG group, attended by representatives from Apple Computer, Inc. and leading software companies.

Binary II allows files to be stored at a great savings in disk space. The new format also allows for error-checking protocols such as XMODEM to receive and transmit files with greater accuracy. Gary B. Little, author of Pinpoint's "Point-to-Point" terminal program programmed the Binary II standard into two public-domain programs and a file format definition, all now available on MAUG in Database Library 10 of the Apple II Forum. (Use the command GO APPLE2 on CompuServe.)

The next versions of "Point-to-Point" and PBI's "Commworks" will feature built-in Binary II support.//

ORD PROCESSORS

for

robably the first software package most of us buy is a word processor. Certainly it's the most widely used computer application across the board.

If you're just beginning, how do you choose a program? And if you've been using a trusty word processor that took time to master, what in the world would get you to switch? Since needs vary so much, we've broken word processors down into three categories: Student Use, Personal Use and Power Use.

With so many Apples in classrooms and in homes specifically for the children, it's natural to include a "Student Use" section.

Next we created a "Personal Use" category. This type of word processor should fulfill your needs from writing memos to perhaps even composing that Great American Novel. You want and need a flexible, easy-to-get-into word processor without its necessarily having extensive formatting capacities.

But, for those of you who do need explicit formats we created the "Power Use" section. Are you preparing legal briefs? Arriving at the final stage of a Ph.D. dissertation? A "Power Use" word processor is in order.

Three reviewers, adept in their particular areas, give you the lowdown on the word processor that will hopefully not only make your life easier, but perhaps inspire you to switch from the one you've been holding onto. continued on next page

STUDENT USE



PERSONAL USE





WORD PROCESSORS for

STUDENT USE

by ROBERT SCAROLA



he trend in elementary and secondary education is to integrate powerful—or potentially powerful—computer applications into the curriculum. Simply, younger and younger children will learn to write using a word processor, or learn to keep track of facts with a database. As a parent, you probably want to keep up with what your child is doing at school. Also, you may want to start your own home activities to complement or supplement what's happening at school.

The word processors in this "Student Use" section include several time-tested programs, a new one that speaks, and a public domain program certainly worth more than a passing glance.

THE MILLIKEN WORD PROCESSOR

I don't know of a simpler, easier to use or less confusing word processor for children in first to third grade than **The Milliken Word Processor**.

The program is outstanding because it incorporates just the right number of essential word processing features to make it a useful writing tool for youngsters, and in addition provides all menus, commands and instructions on-screen in a language and format children can readily comprehend.

The program menus are all enhanced with icons that represent the "real-world" object of the word processing function offered. For instance, a line drawing of a desk with a file cabinet,

manual, typewriter and paper and pencils arranged on it represents the "desk" area from which the child chooses to write (press the W key); access the disk drive (press F for file); or access the printer (press T for typewriter). Press ESCAPE to cancel any function and return to the previous menu.

This "press one letter or number" selection process is used throughout the program, whether you are moving text, storing a file or printing a document. Consequently, any child who can read short words and sentences can understand and use the Milliken Word Processor.

The "paper" section of the program, where word processing is actually done, is limited to 8 lines of text in either 40-

or 80-column format. A very large "T' shaped blinking cursor guides the typing. Arrow-key based text scrolling, deletion to the left, automatic insertion and wraparound are all built-in. Other functions like moving and finding words, copying text or block deletion of text are all available from the "writing tools" menu which you call up simply by pressing ESCAPE.

At most, three keystrokes are required for any operation in the Milliken Word Processor, whether you are moving text, getting or putting away a file in the cleverly-pictured file folders, or printing out text.

FREDWRITER

FrEdWriter (Free Education Writer) is a unique student word processing

II COMPUTING, FOR APPLE II USERS

program – powerful, easy to teach and learn, and *free* to schools, teachers and students (you are also permitted to make and distribute free copies to your friends). Others pay \$20.

FrEdWriter comes up on the screen with a main menu selection of seven topics. This menu provides all the information you need to use FrEd-Writer: a brief but thorough tutorial and utilities to set the date and time, format a new disk, copy a disk, and to view, delete or copy document files.

The text screen looks just like FrEd-Writer's parent program, Apple Writer, and FrEdWriter works much like a simplified Apple Writer. For instance, simply pressing Ctrol-T at any time puts a list of 15 commands in front of you along with a definition of what each command does. Want more help? Just press RETURN from this tutorial and you get clear, short, well-written summaries of each command. You just can't get lost or confused.

Two slight drawbacks: disk file activities like copying or deleting a file must be done from the main menu. But if you access the main menu from the text area, you lose the document you are working on unless you remember to save it first. Also, the main menu is not memory resident. It must be loaded from the disk, which slows things down considerably.

These are minor drawbacks, though, compared to the program's overall ease of use and public domain status.

FrEdWriter is the natural transition to Apple Writer and AppleWorks, and will be used heavily by teachers and students in sixth grade and above in the years to come. A companion program, FrEdSender, available shortly, will make it easy to telecommunicate FrEdWriter files.

BANK STREET WRITER

Bank Street Writer has been greatly improved since its debut in 1984 as a powerful but easy-to-use word processing program for students in grades four to six. The latest, revised version eliminates the awkwardness of switching to a different menu select screen to edit text. You edit as you go, moving through the text with the arrow keys.

FrEdWriter is free to schools!



BANK STREET WRITER

The "edit mode" in the new version is reserved for dealing with text in blocks so that it can be erased, moved or copied; for finding and replacing words; and for accessing the drives and printer by going to the "transfer" menu.

This easy access to clear menus and functions with one press of the ESCAPE key, with the text still onscreen, is the heart and soul of Bank Street Writer and the reason it is still a valuable introductory word processor. Happily, Broderbund did not destroy this appealing simplicity in the process of adding features like text mode editing, an 80-column screen mode, underlining and direct printer access. And, hey, they even managed to keep the manual and disk tutorial easy to understand.

One significant flaw is that it creates binary files instead of ASCII text files, which is a problem if you want to telecommunicate your files or access them with a program like Apple Writer. Broderbund does include a file conversion program in the BSW utilities, but it's a time-consuming process.

BSW's popularity with students and teachers over the last three years is welldeserved. The best testament to its quality and appeal is the extensive copying by other software developers of features BSW introduced, such as one press of the ESCAPE key to move among command modes or cancel mistakes.

TALKING TEXT WRITER

Talking Text Writer attempts to apply the reinforcement principle to creative writing. As students create text, the program, with an Echo speech synthesizer plugged into a slot in the Apple, can pronounce the letters, words or sentences the students type.

The idea has real merit — many students are auditory learners rather than visual learners. Most students are naturally intrigued by a computer that "speaks." Pre-school, primary and learning handicapped children can all benefit from having typed letters and words repeated verbally immediately after they are typed. I admit I am intrigued by the possibilities, and I approached Talking Text Writer with high expectations.

Unfortunately, for two important reasons, the program falls short of its potential.

First, TTW is not a very good word processor, especially for the very young or learning-handicapped students. Its menu selection system is difficult for an adult to use and beyond the reach of a young child or handicapped learner. The speech synthesizer functions are buried in the command sequence for the word processing functions. And the interrelationships of this menu structure can only be understood by reading through painfully obscure documentation. There are no onscreen help menus, and if you make a mistake, a nondirective message appears at the top of the screen-"Inactive key pressed. Try another."

Secondly, the Echo speech synthesizer, at least in combination with TTW, produces a tinny pronunciation of words and letters, and worse still, an unrhythmic and stilted pronunciation of sentences. Everything comes out with the same mechanical pacing, as if there were no difference at all between "He took the dog for a walk." and "She screamed 'MURDERER!" as he fired the pistol."

continued on next page

Choose A Spelling Checker

Spelling Checker Checker Document

Spelling Checker: AppleWorks pop-up desk accessory, requires Pinpoint Desktop Accessories (1.1 or later); best for shorter documents.

Checker Document: supports ProDOS ASCII text files, AppleWorks and Apple Writer II.

61,000 word dictionary; personal dictionary capability; requires 128K. Pinpoint Software, 5901 Christie Ave., Suite 501, Emeryville, CA 94608. (415) 654-3050. \$69 each.

CIRCLE 244 ON READER SERVICE CARD

Sensible Speller IV

Sensible Speller: ProDOS; supports ASCII text files, AppleWorks, Word Juggler and Apple Writer II; features an autoload program for extended memory cards.

Sensible Speller IV: DOS 3.3, Apple CP/M and Apple Pascal; supports ASCII text files, Apple Writer II, Bank Street Writer, HomeWord, Format II, PFS:Write, ScreenWriter, SuperText and Wordstar.

80,000 word dictionary; personal dictionary capability; requires 64K. Sensible Software, 210 S. Woodward, Suite 229, Birmingham, MI 48011. (313) 258-5566. \$125.

CIRCLE 245 ON READER SERVICE CARD

MegaWorks

AppleWorks add-on; 50,000 word dictionary; can add up to 10,000 words; requires 128K. Megahaus, 5703 Oberlin Drive, San Diego, CA 92121. (619) 450-1230. \$125.

CIRCLE 246 ON READER SERVICE CARD

continued on page 20

The Milliken Word Processor uses "realworld" icons.



TALKING TEXT WRITER

Despite these major faults, and a quiver of minor ones, I can still imagine a real, if limited, use for TTW to justify its \$250 cost. The program might prove an effective reinforcement tool for teaching letter and word recognition, and encouraging a student to write and read. It could also in a program for learning-handicapped students where each student was supervised one-on-one by a trained special education teacher.

Otherwise, the program is too pricey and difficult to use for the general student or home environment.

II Computing's Teacher/Parent Tips offer lesson plans to enhance and extend our type-in programs. See the pull-out section in the middle of this issue for lesson plans for TALKING TEXT WRITER.

GUTENBERG JR.

Gutenberg Jr. is a specialty word processor for high school students or adults interested in creating a wide range of font styles, layouts and formats in their documents.

I was impressed with the possibili-

ties offered — they included expanded and condensed pitch selections; userdesigned headers and footers, titles, diagrams and pictures; and mixing foreign language script with English text.

But be warned Gutenberg Jr. is not easy to use. The manual offers at least three ways to do anything, and it takes time and attention to sort through the often dense explanations.

For instance, to insert characters in existing text in Gutenberg Jr., you must dance through a three-step process from the "command mode" (where you are when you start the program), to the "insert mode" (which lets you type in text), and back to the "command mode" again in which you can move around the text with the arrow keys and insert and delete characters. If, during the dance, you wish to pause somewhere in your text and dip into "insert mode" to add a word or two, the entire line to the right of the cursor inexplicably disappears and goes off somewhere on vacation, only to reappear on the job again when you skip back out to command mode. I found it all somewhat dizzying.

As a word processor the program could use some simplification and the addition of friendly on-screen help menus.

But there is no question that as a typesetting and document formatting program, Gutenberg Jr. deserves the connotation its name implies. It certainly offers any user who has the energy and patience to work through the snarls in the program and documentation the opportunity to enhance documents beyond the scope of anything I've seen on other word processors. If you are inclined toward that sort of print artistry, and you do use Gutenberg Jr., just be sure to run all the demos that come with the program, read the manual thoroughly, and practice for several hours before you work on a serious project.//

Robert Scarola, a writer and educational consultant from San Anselma, California, teaches teachers, parents and students to use educational software.

WORD PROCESSORS for

PERSONAL USE

by CYNTHIA E. FIELD



hink of one word that summarizes your needs in a personal word processing program. Inexpensive? Easy? Maclike? Integrated?

Whatever your key desire, take a look at the following five programs. There's at least one you will want to add to your personal word processing wish list.

MULTISCRIBE

You mean you still haven't written those thank-you notes you intended to dash off right after Christmas? Procrastinate no more! With **MultiScribe**, word processing takes on new appeal. . .for the writer and for the reader.

The main attraction is that, unlike most other word processing programs for the Apple II, MultiScribe is graphic. What you see on your monitor is what you will see on paper. And what you see in both cases is an array of plain or fancy fonts and typestyles that you can mix and match to create visually-striking letters, reports and flyers.

Imagine the look on Aunt Mildred's face when she receives your *next* thank-you note! Imagine your surprise when you realize, perhaps for the first time, that word processing can be fun as well as functional.

Styleware's easy-to-master program offers essential word processing options wrapped in the intuitive, Macintosh interface. Use a mouse (or a keyboard alternate) to pull down any of Multi-Scribe's eight menus. Selecting program features this way eliminates the

need to memorize commands.

MultiScribe lacks some of the features that power programs tout—like automatic footnoting or macros (abbreviated commands). Confess. How often does your writing require that level of sophistication?

Besides, you already know that the real power in writing is in the words you choose and the way you make those words absorb the reader's attention. Documents created with MultiScribe almost guarantee positive reader response.

THE BARD'S "PRO-AM" APPLE IIe/c WRITING SYSTEM

If yours is a typical family, probably no single word processor "fits" everyone. Some programs, like most of those described in the Student Use section, are just too basic for the advanced needs of an electronic cottage. Other programs, like those reviewed in Power Use, are too feature-filled for everyday needs.

Could your family benefit from three separate word processing programs—at Starter, Experienced, and Professional levels? That's what you get with The Bard's "Pro-Am" Apple IIe/c Writing System—three word processors in one! All levels use a similar command structure, so you can evolve nearly effortlessly into a higher level from a lower one.

Beginners, whether children or adults, will appreciate the Bard's disk-based tutorial; it explains what word processing is and what the program does. As you advance in your requirements and in your level of proficiency, you will rely less on the full-word-prompting Command Menus and depend more on your memory. Recalling the Bard's mostly mnemonic commands is easy, though—and doing so will speed up your work. The pocket-sized Memory Jogger Card is a handy cheat sheet when you run into word processing fogbanks.

Program screens appear in an easyon-the-eyes typestyle and support a 40column display. Starter and experienced levels offer two different screen text styles, one of which has crisp, thick characters. . .for a family member who may be visually impaired or who tends

continued on next page

to write in the wee hours.

The Bard's System supports many popular printers and the UniDisk 3.5 disk drive. Compatible with Quark's Catalyst 3.0 program selector, The Bard's System has its own quill pen icon. This 3-in-1 word processor with 50,000-word spelling checker offers unusual value.

WRITER'S CHOICE

If you own an Apple II Plus and long for a reasonably inexpensive integrated system, consider Activision's Personal Choice Series. Writer's Choice (the word processor), Planner's Choice (the spreadsheet) and Filer's Choice (the database program) comprise the Personal Choice trio.

Writer's Choice would never be my choice, however. Owners of the 128K IIe and the IIc have so many "modern" word processors to choose from, that Writer's Choice with its old look and its awkward command setup seems out of date and out of touch with what many of today's computer users want: performance without pain.

In Writer's Choice, emphasizing a line of text with boldface typestyle, for example, requires 16 keystrokes!

To its credit, Writer's Choice has enough features to warrant its quest to be "your personal word processor." The program has a straightforward configuration menu to help you convince an unlisted printer to cooperate. After all, not everyone owns an ImageWriter or an Epson.

Unless you have a barebones computer system and, therefore, few choices among word processing programs, you may want to investigate other possibilities before choosing Writer's Choice.

APPLEWORKS (2.0)

At first glance, you may shudder at AppleWorks's \$250 price tag. Take a closer look: AppleWorks is an undeniable bargain.

Apple's popular personal and small business program integrates three applications: a moderately powerful word processor, a database manager and a spreadsheet module. But, wait! There's more. This latest AppleWorks version has the capability to merge database information directly into word



MASTERTYPE'S WRITER

processing documents in a new way. Now you can create customized letters for people in your condo association, bowling league or customer file.

The hefty AppleWorks package holds physical evidence of the program's intrinsic value. In the sturdy box, you find the non-copy-protected program in both 5.25-inch and 3.5-inch formats. (You don't pay extra for backups.) Apple also provides a complete disk-based tutorial on both types of media.

If these goodies were not enough, there's a 162-page written tutorial . . .besides the separate 333-page reference manual. The contents of these volumes is distilled into a four-page, folded Quick Reference Card. Though untrue for most writing, frequently "more is better" when it comes to software manuals. . .and Apple's manuals are among the very best—for thoroughness and layout.

These tutorial and reference materials make it even simpler to use the already easy AppleWorks program. Menus appear in the form of stacked, tabbed index cards. On-line help is always available. Mnemonic Open Apple key commands are consistent from module to module.

If you were to assign a \$40 value to the mail merge feature and consider the manuals and disk tutorial to be freebies, then the main AppleWorks modules cost only about \$70 each. You might even feel a twinge of guilt paying so little for so much, right?

Still, AppleWorks is not for everyone. If you need a word processor only—or if you require a more powerful spreadsheet (one that has graphics capabilities for instance)—then Apple-Works may not be your program of choice. For many personal computing applications, however, AppleWorks has no peer.

MASTERTYPE'S WRITER

MasterType's Writer offers word processing novices of any age a friendly interface, ordinary (and some extraordinary) features and a revolutionary price—only \$29.95. What's the catch? You won't find one.

The program's interface is unusually easy to get along with. You press the Escape key to display menu bars at the bottom of the screen. Each menu bar offers simply stated choices like Print, Load and Help. Instead of using imbedded commands for underlining and boldfacing, you can use color (if you have a color monitor) to highlight the appropriate text. Elementary? Yes. But not just for kids. . .

Older children and adults, too, can use the program to prepare letters and reports. You have a choice of seven screen display fonts. The larger fonts can make writing easier for young children or for the visually impaired. No matter which font you use for composing, Writer's "Print View" mode lets you see what the actual printed copy will look like.

Other advanced features in this decidedly bargain-priced word processor include the ability to split the screen so that you can compare two drafts of your report. . .or work from an outline. Unlike many light-duty word processors, MasterType's Writer has macro capability, and the program can sort information—such as the names of paper route customers or club members.

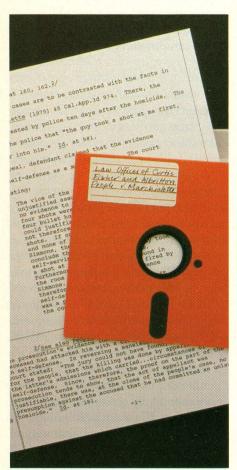
If you are a word processing novice, MasterType's Writer can help you get your feet wet without taking a soaking. The program offers so many attractions that you may never want to leave the shallow end of the pool.//

Cynthia E. Field, a Ph.D. in food chemistry, has reviewed numerous word processors for computer publications. She lives in Wakefield, Rhode Island.

VORD PROCESSORS for

POWER USE

by CHRIS ALBERTSON



can still recall the excitement I felt when I booted up my first Apple word processor-Easy Writer-in 1979. In those days one had to work on a 40-column screen with all caps, and formatting the text often took longer than writing it. Still, just being able to insert, move and delete text represented a giant step beyond the typewriter.

Since then, many new word processing programs have come and gone. The following brief reviews will hopefully help you make the right choice from six disparate yet powerful word processors that run on the Apple IIe and IIc. While the design of some of these programs is impressive, I was amazed to find that only two (Fleet System 3, and Word Perfect) do not feature one or two stationery, inverted status lines. That is a plus, because such lines burn themselves into the screen when left on for long periods of time. I still have a couple of monitors with Word Juggler's status line forever etched in phosphor.

WORD JUGGLER

Originally designed for the Apple III, Word Juggler has lost little in translation to the IIe and IIc.

The Apple III version—which I used daily for about three years - took full and clever advantage of that machine's numeric pad, converting it into a set of handy function keys; Quark's designers have managed to make the Apple II versions just as easy to use by prudent employment of the

Open Apple and ESCAPE keys. In this way, the 13 keys in the top row are given 34 additional functions, all easily identified on an accompanying template. Also included are 20 decals that adhere neatly to the front of as many keycaps - there is even a keycap puller, to make the task easier, and \$29 will buy you actual replacement caps, complete with Word Juggler designations. Add to this a three-sided Quick Reference card and you have a package re-

quiring minimum perusal of the

Word Juggler is memory resident; once it has been booted, the program disk can be replaced by a data disk. The latter need not be preformatted, for Word Juggler lets you initialize a disk in midstream. If you have two drives, use the second drive for Word Juggler's excellent Lexicheck spelling program. Should you need to call up

continued on next page

a help screen, you will have to reinsert the program disk, but with all those decals, the template and reference card, I doubt if anyone will require on-screen help.

Word Juggler's work screen is blank, except for the status line, and that makes it a joy to use. Imbedded printer commands appear at the point of insertion, and their function is spelled out (in inverse, to distinguish them from text), so there are no little symbols to memorize. A correctly formatted text, sans imbedded commands, is but a keystroke away.

It even comes with its own telecommunications program, which has autodial and macro features, and supports most common modems and serial cards. All word processors should have this feature, but very few do.

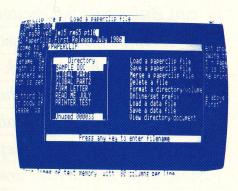
APPLE WRITER II

Apple Writer II, also originally written for the Apple III, has been around for a few years. Its adaptation for the Apple IIe made it one of the first ProDOS-based word processors. Some refinements have been added, but the program is basically the same, and holds up very well.

This is another memory-resident program, and the master disk has to be reinserted only to access help screens, modify print and tab files or run WPL programs. The latter are instructions to the computer, written in WPL (Apple Writer's proprietary Word Processing Language), a powerful tool that lets you automate many time-consuming routines. The package comes with a 164-page WPL manual. The relative ease with which a WPL program is written might surprise you, but you should first learn to use the word processor itself. To make that a painless process, a superbly designed, 12-lesson stand-alone tutorial disk is included in both 40- and 80column versions.

Apple Writer II does not support a mouse, which—based on my mouse experience with other Apple II word processors—is probably a blessing; nor does it come with a speller, although it supports several excellent ones. With sensible use of WPL, this becomes one of the most versatile ProDOS-based

Word Juggler comes with its own telecommunications program.



PAPER CLIP

word processing packages ever created for the Apple II series of computers.

FLEET SYSTEM 3

Fleet System 3 gives you a lot of features for \$79.95. It comes with a 90,000-word dictionary, a healthy thesaurus, and a fully accessible user dictionary, which holds approximately 10,000 words and can be updated, searched and printed. That alone might cost \$79.95, but the program is also a full-fledged word processor that boasts virtually all the features one has come to expect from a top-shelf product, and then some. Among the unusual extras is a statistics report that counts the number of words by length.

The work screen is uncluttered, with a single (not inverted) status line at top. Formatting dot commands will eventually generate a bit of confusion, but a see-what-you-get screen is just a keystroke away. Also at hand is a help screen containing all the major commands; when called up, this screen uses the alternate text area, a work space of 57 to 85 lines (depending on the column width setting), so it is not accessible while working with two files. The practical user will take advantage of the

option to print the help file.

On the negative side, I have to wonder why the ESCAPE key has been renamed; referring to it as the "FCN" (Function) key merely adds unnecessary confusion. But my main objection to Fleet System 3 is that the program disk is copy protected, and a backup disk must be purchased separately—that is simply outrageous. In practice, waiting for a replacement could cause tremendous problems.

These complaints notwithstanding, Fleet System 3 is fairly easy to use, crammed with good features, well documented, and certainly worth the price of admission.

PAPER CLIP

For value, it would be difficult to beat **Paper Clip**, a \$59.95 program that was originally written for Atari computers. The Atari version drew high critical praise, but the program is up against far stiffer competition in the Apple world—still, it holds its own.

I have not seen the Atari edition, but the designers seem to have modelled the Apple II version after the Macintosh-at least the main menu has that trendy look. The program boots up to the work screen, but CON-TROL-F (for "Finder," a Macintosh term) pops a window onto the middle of the screen, and offers handy file manipulations. Loading a data file is a breeze, but Paper Clip comes with neither decals, a template, a reference card, nor a help screen, forcing one to go hunting for commands through 125 pages of a poorly-organized manual. A steady user will of course eventually learn to maneuver through Paper Clip and, in the learning process, discover an impressive number of special features (including the sorting of column entries, and math with fixed decimal places), but should a word processor play hide-and-seek with the user? I think not.

There are some quirks to be wary of, such as all text in memory being erased, without warning, whenever the line length is changed! There are enough ways to accidentally lose data without also having one built into a program.

Because it is awkwardly designed and documented, I do not recommend it for the first-time computer user, but it is fine for the more experienced who don't mind spending considerable time deciphering an informative but poorly structured, ill-worded manual.

Better documentation, a step-by-step tutorial, and a simple template or Quick Reference card would make a world of difference, because this is basically a useful program.

MANUSCRIPT MANAGER

From Pergamon Press comes a new and unusual word processor, aptly called Manuscript Manager. What sets this one apart from the rest is its availability in various versions, each one geared to produce copy in accordance with a particular format, or style. Style, here, is a manner of dealing with forms of expression and typographical detail. The academic world, for instance, also demands a certain uniformity. Manuscript Manager is available in two styles, so far, APA (American Psychological Association) and CBE (Council of Biology Editors). We received the latter for this review.

However, Manuscript Manager is flexible and can be used without adhering to any particular style. But, if you need to turn out journal articles, dissertations, theses, or any kind of manuscript that must conform to the stylistic rules of the CBE Manual (Fifth Edition), this program will save you a tremendous amount of time, not to mention headaches.

It will not take you long to learn how to use Manuscript Manager; just follow the steps in the manual, a most sensibly structured and literate piece of software documentation. There are also concise, well-laid-out help screens. which can be invoked at any time, and helpful reminders that appear automatically when you might need them.

Now for the magic of Manuscript Manager. Creating footnotes, citations, title pages, references, tables, equations, abstracts, running heads, author notes and figures is a breeze. One merely selects the task from a command menu and follows a series of straightforward prompts. Proper formatting, which can be a time-consuming, frustrating job, is automatically taken care of, and the

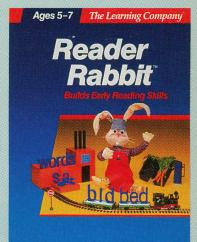


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Find out for yourself why Reader Rabbit, Writer Rabbit and Math Rabbit are teachers' pets -and children's favorites!



READER RABBIT (Ages 5-7)* Winner of the Critic's Choice Award, Reader Rabbit features four animated games which build fundamental reading, spelling and memory skills. It's the best selling early reading program available.

WRITER RABBIT (Ages 7-10) With Writer Rabbit, your child will learn to love reading and writing. The program teaches children how to write complete sentences and "silly" stories. Dr. Ariella Lehrer calls it "a must for every child who is beginning to write."

MATH RABBIT (Ages 5-7)

The most comprehensive early math program available, Math Rabbit is "rich in educational content and fun to play-bound to be a classic that will be enjoyed by parents, teachers and children alike." Dr. Carol Wilder

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Explanation of Features:

Most of the items in our chart of features are familiar to those who have used word processors.

Programs that have typeover allow you to type directly over existing text, rather than just inserting new text. Some programs let you imbed special non-printable control characters in your document to control printer functions. A few of the programs let you use a mouse; most offer on-screen help. With some you can redefine control keys to choose how you can access each function. A few have macros, which let you execute a series of keystrokes just by typing a few keys.

Some programs allow separate block operations—you can mark a block of text and then use it later. Others use a software "clipboard" to let you cut and paste blocks of text. With those that allow you to insert place markers, you

can easily return to any point you've marked in the document. All the programs let you delete one character at a time; some let you delete a word, to the end of a line, or an entire paragraph.

A few are "what you see is what you get" programs—your printed document will be just like what you see on the screen. Some offer automatic paragraph indents or automatic page reformatting, or let you use different mar-

	Typeover	Imbed control characters	Mouse	On-screen help	Redefinable control keys	Macros	Separate block operations	Cut and paste	Place markers	Delete by word	Delete to end of line	Delete paragraph	What you see is what you get	Auto paragraph indents	Auto reformatting	Margin control	Print formatting	Printer codes toggled
STUDENT USE																		
Milliken Word Processor				•						7					b			
FrEdWriter		•		•												•	•	
Bank Street Writer			•	•												•		
Talking Text Writer											•							
Gutenberg Jr.	•	•			•	•	•	•		•	•		•			•	•	•
PERSONAL USE																		
MultiScribe			•				•	•		•	•	•	•		•	•	•	•
The Bard's "Pro-Am" Apple Ile/c Writing System	•	•		•		•	•	•		•	•				•	•	•	•
Writer's Choice	•	•		•				•		•	•					•	•	•
AppleWorks	•	•		•				•	•	•	•					•	•	•
MasterType's Writer	•			•		•	•	•	•	•	•						•	•
POWER USE																		
Word Juggler	•	•		•				•		•	•					•	•	•
Apple Writer II	•	•		•		•		•		•		•		•		•	•	
Fleet System 3	•	•		•			•			•	•					•	•	
Paper Clip	•	•						•			•			•		•	•	
Manuscript Manager	•	•		•		•	•	•	•	•	•			•		•	•	
Word Perfect	•	•		•	•	•	•	•		•	•		•		•	•	•	•

gin sizes within the same document. Special printing features include letting you format your printed documents, preview the final printed page or use print spooling—one document prints while you work on another.

Most of the programs let you automatically search for a word or string of characters; several will let you replace one word with another throughout the text, and one lets you search both forward and backward. A few allow mul-

tiple documents in memory at once, and some let you see multiple documents on screen at once. And with some you can undelete—restore a word you've just deleted.

Some of the programs appear simpler than they really are, because special features are hidden until you need them. With some you can automatically include the date in your document, or automatically convert text between upper and lower case. Most

either use regular ASCII text files or let you convert your documents to and from ASCII files.

In the advanced features department, some programs have mail-merge and spelling checker functions available, either as part of the word processor or as a separate add-on program. Several programs allow you to put headers at the top of each page or footers at the bottom, and a few auto-

continued on next page

Print preview	Print spooling	Search	Replace	Search forward or backward	Multi documents in memory	Multi documents on screen	Undelete	Features hidden until needed	Auto date in document	Upper/lower case conversion	ASCII text file conversion	Mail-merge	Spelling checker	Headers	Footers	Footnotes	Forced page breaks	Display page breaks	Auto page numbering	Copy protected	Works with 3.5 disk
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FEBRUARY / MARCH 1987

matically place footnotes. Some of the programs let you force a page to end, or display for you where each page ends; a few let you automatically include page numbers. Finally, the chart indicates which of the programs work with 3.5-inch disks, and which are copy protected.//

Choose A

Spelling Checker

continued from page 12

Spellworks

AppleWorks add-on; 90,000 word dictionary; can customize to 2,000 words; requires 128K and one disk drive (two recommended). Advanced Logic, 1283 Reamwood Ave., Sunnyvale, CA 94089. (408) 747-1988. \$49.95. CIRCLE 247 ON READER SERVICE CARD

Webster's Spelling Checker 1.4

ProDOS and DOS 3.3 on same disk: ProDOS version supports ASCII text files, AppleWorks, Apple Writer II (Ver. 2.0), Magic Slate, MasterType's Writer, MouseWrite and Word Juggler; DOS 3.3 version supports ASCII text files and Apple Writer II, Bank Street Writer, HomeWord, Magic Window II, PIE: Writer and Screenwriter II; 110,000 word dictionary; 1,100 word dictionary you can customize; requires 80 columns, 128K for ProDOS; 64K for DOS 3.3. Simon and Schuster Software, 200 Old Tappan Rd., Old Tappan, NJ 07675. 800-624-0023. \$59.95. CIRCLE 248 ON READER SERVICE CARD

Bank Street Speller

DOS 3.3; supports Bank Street Writer only; 30,000 word dictionary; personal dictionary capability; requires 48K. Broderbund, 17 Paul Drive, San Rafael, CA 94903. (415) 479-1700. \$69.95.

Word Processing Product Information

THE MILLIKEN WORD PROCESSOR

Milliken Publishing Company 100 Research Blvd. P.O. Box 21579 St. Louis, MO 63131 (314) 991-4220 48K, DOS 3.3, Ilc or Ile for 80- column display, 1 5.25-inch drive \$69.95 CIRCLE 222 ON READER SERVICE CARD

FREDWRITER

Steele Publishing P.O. Box 5493 Concord, CA 94524 (415) 685-7265 64K, ProDOS, 1 5.25-inch drive \$20.00 CIRCLE 223 ON READER SERVICE CARD

BANK STREET WRITER

Broderbund Software 17 Paul Drive San Rafael, CA 94903 (415) 479-1700 64K II+, Ile 128K Ile, Ilc, ProDOS, 1 5.25-inch drive \$69.95 each Updates of former versions of BSW are available from Broderbund for \$20. They come with a new manual. Older versions purchased within the last 90 days will be updated at no charge if sent in with a sales receipt.

TALKING TEXT WRITER

Scholastic Software Department JS 730 Broadway New York, NY 10003 (212) 505-3000 128K, ProDOS, 1 5.25-inch drive \$249.00 CIRCLE 225 ON READER SERVICE CARD

GUTENBERG JR.

Gessler Educational Software 900 Broadway New York, NY 10003 (212) 673-3113 64K, DOS 3.3 1 5.25-inch drive \$99.95 CIRCLE 226 ON READER SERVICE CARD

MULTISCRIBE (Version 1.10)

Styleware, Inc. 6405 Hillcroft, Suite 201 Houston, TX 77081 800-233-4088 128K, ProDOS, 1 5.25-inch drive \$59.95 CIRCLE 227 ON READER SERVICE CARD

THE BARD'S "PRO-AM" **APPLE IIe/c WRITING** SYSTEM (Version 2.0)

Writing Software International 110 E. Broadway, Suite 600 64K ProDOS, 1 5.25-inch Missoula, MT 59802 (406) 543-3141 128K, 1 5.25-inch drive \$69.95 CIRCLE 228 ON READER SERVICE CARD

WRITER'S CHOICE (Version 1.0)

Personal Choice Software Activision, Inc. 2350 Bayshore Parkway Mountain View, CA 94043 800-227-9759 64K (128K for 80-column mode or to use spelling checker), DOS 3.3, 1 5.25-inch drive \$49.95 \$119.95 (Personal Choice Series) CIRCLE 229 ON READER SERVICE CARD

APPLEWORKS (Version 2.0)

Apple Computer, Inc. 20525 Mariani Avenue Cupertino, CA 95014 (408) 996-1010 128K, ProDOS, 1 5.25-inch or 3.5-inch drive \$250.00 CIRCLE 230 ON READER SERVICE CARD

MASTERTYPE'S WRITER

Mindscape, Inc. 3444 Dundee Road Northbrook, IL 60022 800-221-9884 128K, ProDOS, 1 5.25-inch or 3.5-inch drive \$29.95 CIRCLE 231 ON READER SERVICE CARD

WORD JUGGLER

Quark, Inc. 2525 West Evans, Suite 220 Denver, CO 80219 (303) 934-2211 64K, 128K recommended, ProDOS, 1 5.25-inch drive CIRCLE 232 ON READER SERVICE CARD

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FLEET SYSTEM 3

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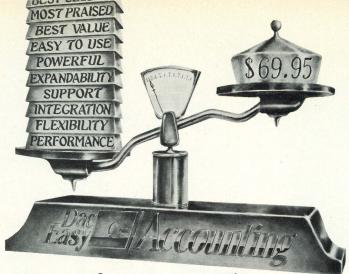
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MANUSCRIPT MANAGER

Pergamon Press, Inc. Maxwell House, Fairview Park Elmsford, NY 10523 (914) 592-7700 128K, ProDOS, 1 5.25-inch drive \$175 CIRCLE 236 ON READER SERVICE CARD

WORD PERFECT 1.1

Word Perfect Corporation 266 West Center Street Orem, UT 84057 (801) 225-5000 128K, ProDOS, 1 5.25-inch drive \$179 (with educational discount: 1 copy, \$59; over 10 copies, \$49 each; over 25 copies, \$39 each) CIRCLE 237 ON READER SERVICE CARD



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Journal of Financial Computing, 1985*

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- product sales Detailed three-year history for every product Alert and activity
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*IBM version reviewed.

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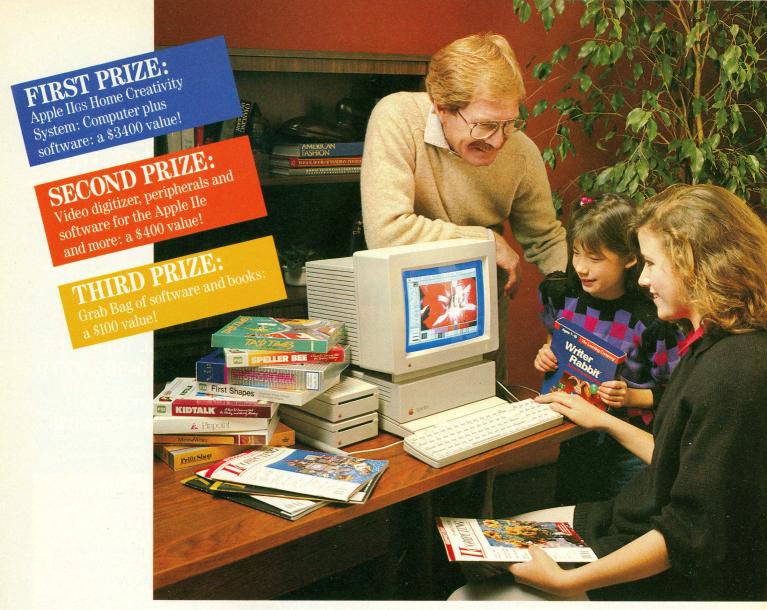
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Some people are fascinated by cryptography. They enjoy the intellectual challenge of devising complex logical systems for enciphering messages, and the equal challenge of breaking systems devised by fellow cryptographic enthusiasts. MESSAGE.CODER is not designed for them.

But if you would like to encode a message to keep it private for yourself or a friend, MESSAGE.CODER does it for you quickly and easily. The MESSAGE.CODER program generates thousands of different codes, so you can use a different code for each message or for each recipient if you wish. When you have encoded your message, you may decode it immediately to check it for accuracy. You may then print the coded message to your printer, or save the message in a text file on disk.

CODING A MESSAGE

To use MESSAGE.CODER type in the listing from page 42 and check it with TYPO.II or select it from the Action Disk Menu. To begin encoding a message, you must first specify a master code name for that message. The master code uses any combination of keyboard characters—a word, a sentence or a jumble of keys pecked at random. MESSAGE.CODER sums the ASCII values of all the characters included in the master code name. This sum becomes the seed for

the Apple's random number generator, which is used in turn to create the master code for your message. Each message must be short (usually less than 200 characters), but you may encode as many messages as you wish without changing the master code. You may print out each message as it is encoded, or you may save a whole series in text files for later use.

Be sure to make a note of the master code name. Without it, only an expert cryptographer could decode the message later. You may save the master code name along with the message in the text file if you choose, but doing so greatly increases the chances of some snoopy outsider cracking your code. It is far more secure to keep the master code name for each message separate from the message itself, perhaps in a notebook dedicated to that purpose.

SEND A MESSAGE TO MICHAEL

Let's take an example. Suppose you want to encode a message for your friend Mike on his 14th birthday. You might choose "MIKE/14/B" as a master code name. (Be sure to note upper case vs. lower case letters, punctuation and spaces in your code names. "MIKE/ 14 /B" would be a different code.) Then MESSAGE.CODER asks whether you want to use the special

continued on next page

code name option; say "no" for the moment. (We will get to that later.) Now type the message, "HAPPY BIRTHDAY, KID!" After a few moments, your Apple returns your coded message as:

HHY=1 K4B7# #=T.\$ SB37= C?.3U

Then MESSAGE.CODER asks if you want to decode the message. Say yes. Soon, you should see "HAPPY BIRTHDAY, KID!" again on your screen. You will be asked whether you want printer output, whether you want to save the coded message to disk, whether you have another message and, if so, whether you want to use the same master code. If your text is long, just split it up and encode it as several messages all using the same code.

So how does Mike get the message? Let me count the ways. You can copy it out by hand and send it to him, or read it over the phone ("That's number sign, equals, capital T, period, dollar sign. . "). You can print it out and send the hard copy. You can hook up your respective modems and upload the text file you remembered to make. Or you can type it into his message box on your local BBS (or on a national BBS, for that matter) if the sysop doesn't object. To decode the message, Mike will need:

- an Apple II series computer
- a copy of this program
- the name of the master code you used for that message.

It is easy to keep your friends from reading each other's mail. Just use a different master code for each person. Of course, you must pass the master code name separately from the message itself. This can be inconvenient. The program allows you to avoid doing so. That is the function of the "special code name option." This function allows you to add exactly ten characters-no more, no less-to the end of your message. You can make these characters look like code, but they will really be plain text. Before you and your friend start exchanging messages, you must agree on a method for using

this disguised plain text to point to the master code name. One such method might be a variant on that old spy's device, the book code. Suppose you and Mike both possess copies of the standard paperback edition of *The Hitchhiker's Guide to the Galaxy*. You agree that this book will be the source of your master codes.

Before you begin coding, you open the book to a random page (say page 128). This page begins with the words "smuggling Antarean parakeet glands." You decide to use these words as the name of your master code. (For simplicity's sake, I'll use capital letters only.) When asked for the code name, you type: "SMUGGLING ANTAREAN

ou can use a different code for each message or for each recipient if you wish.

PARAKEET GLANDS." When asked whether you are using the special option, type Y. Then type your message. After it has been coded, you will be prompted to enter two sets of five characters each. These will look like part of the code, but will really be plain text. In this case, you might type:

C12F8 XF4R

When Mike receives the message, he will examine the last ten characters (ignoring spaces, which are arbitrary.) The numbers 1,2 and 8 in the first set of five tell him that the code name is to be found on page 128. The letters C and F—both from the first half of the alphabet—mean that the code name begins at the top of the page.

Looking at the second set of five, Mike ignores the letters, which are put there only to confuse outsiders. He takes the number 4 to mean that the first four words of the page form the master code name.

If the letters in the second-to-last group had been, say, Q and S, then the code name would be the last four words on the page. Starting at the end and reading backward, these would be "now was it were." That would then have been the code name.

Of course, you may come up with an entirely different formula for using the special code name option to pass information about the code name as part of the message. If you are encoding a long message in several segments, you should only use the special option once, either in the first segment or the last, as you and the recipient agree beforehand. If you are really paranoid and want to throw even more dust in the face of possible crackers of your code, you could change codes from segment to segment and encode in each segment the code pointer to the master code name you intend to use for the

(By the way: the program includes your ten characters of plain text as part of the coded message, and treats them as such thereafter. So when the message is decoded, the last ten characters will come out as garbage. Mike will know to ignore them. Potential crackers won't.)

Happy obfuscation to you all.//

Charles Bell is an instructor at the Computer Workshop, specifically designed for children and young adults. He lives in Southern California.

II Computing's Teacher/Parent Tips offer lesson plans to enhance and extend our type-in programs. See the pull-out section in the middle of this issue for lesson plans for MESSAGE CODER.

IF YOU WOULD LIKE TO SEE MORE ARTICLES LIKE THIS, CIRCLE 243 ON OUR READER SERVICE CARD

Dvorak's Keyboard

by MICHAEL W. MURRAY Program by FRANK HAYES

The Dvorak keyboard lets you type faster by putting the most frequentlyused letters in the most accessible positions. Apple IIc and IIGS owners already have the Dvorak keyboard built into their machines; now other Apple IIs and compatibles can switch from the standard keyboard to Dvorak with D.KEY, part of this issue's Software Library and Action Disk.

According to Virginia Russell, when Dr. August Dvorak designed the Dvorak keyboard, high technology was exactly what he had in mind. Or at least, high technology, 1930s style.

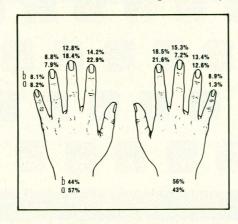
"The QWERTY keyboard was designed by Christopher Latham Sholes," she says. "Back in 1872, he developed a keyboard that was so efficient that if the typist typed fast, the keys would jam. He then went back to the drawing board, so to speak, and redesigned the keyboard to put the keys in the position we've got today."

Ms. Russell is president of the Dvorak International Federation. Over the last few years, she's watched more people leave behind that 100-year-old design for something better.

On those 19th-century typewriters, she explains, the keys fell back into place by gravity alone; a typist's top speed was 20 words per minute. By 1920, however, the technology had improved, and some typewriters could keep up with even the fastest touchtypists. It was Frank Gilbreth, efficiency expert and author of *Cheaper by the Dozen*, who suggested the idea of a more efficient typing keyboard. One of his students at Brown University, William Dealey, took up the challenge.

Dealey's brother-in-law, August Dvorak, was in the Navy at the time. "When he came back," says Virginia Russell, "Dealey suggested that they get a grant to study the frequency of usage of letters in the English language, then try to rearrange the keyboard." And so they did: drawing on Dr. Gilbreth's time-and-motion studies, Dvorak and Dealey designed a new keyboard and patented it in 1936.

On the Dvorak Simplified Key-



a) With the QWERTY keyboard, fingers are off the home row 68% of the time, and the left hand works 14% more than the right. b) With Dvorak, the right hand works harder than the left, and the work each finger does is appropriate to its skill and strength.

board, all the vowels and the most frequently-used consonants in the English language are located on the home row. The vowels are within immediate touch of the left hand, the consonants quickly accessible to the right. The lesser consonants and punctuation keys are on the adjacent rows. On both these upper and lower rows, the index

and middle fingers touch the consonants in order of frequency of use. Punctuation is located on the keys touched by the ring and little fingers, with the numbers and special signs on the top row.

Thus, a Dvorak typist can type 70 percent of the most commonly used words in the English language without leaving the home row—twice as many as with QWERTY. Dvorak also requires the typist's fingers to move only a fraction of the distance of QWERTY—which adds up to fewer errors, less fatigue, greater production and happier typists.

But the Depression delayed widespread manufacture of Dvorak typewriters, as did the shortages of World War II. Even after the war, anyone buying a typewriter had to choose between QWERTY and Dvorak—and because most companies already owned QWERTY typewriters, they tended to buy *more* QWERTY machines.

But the microcomputer changed all that. For example, you can convert your Apple IIc to Dvorak almost instantly—just use the switch next to the Reset button labeled *Keyboard*. On the new IIGS, you can select the Dvorak keyboard from the Control Panel. There's no pushbutton solution for the IIe or most Apple-compatibles—but that's where the program continued on next page

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D.KEY from this month's Software Library comes in. Just type in the program from the listing on page 50 and check it with TYPO.II, or select it from the Action Disk menu. You can use D.KEY to practice typing with a Dvorak keyboard; when you're through, press ESC to return to QWERTY and BASIC.

You can also use a Dvorak keyboard with any other Applesoft BASIC program. Just load D.KEY, then type GOSUB 1000. You'll have a Dvorak keyboard you can use with any BASIC program that checks the keyboard with INPUT and GET commands—and you can return to QWERTY at any time just by typing CONTROL-RESET.

n 19th-century typewriters the keys fell back into place by gravity alone; a typist's top speed was 20 words per minute.

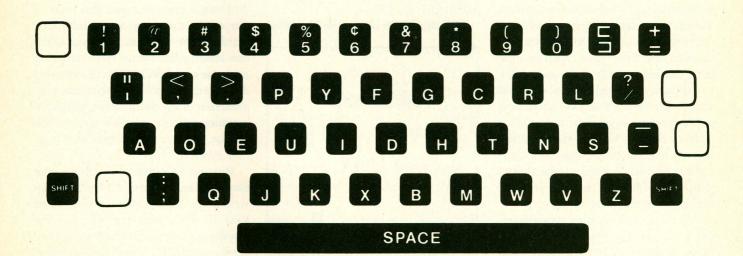
According to Virginia Russell, the Dvorak keyboard is doing big business in government and corporate offices. "And a lot of secretarial schools use it now," she says. "I even know of two or three companies that demand that their employees are Dvorak typists." A new typist can usually get up to 40 words a minute after only 18 hours of instruction. Because old habits die hard, experienced QWERTY typists may take twice as long to get up to speed.

But considering the ever-increasing popularity of Dvorak—and how easy it is to use on an Apple II—it may just be worth learning after all.//

Michael W. Murray, a student at University of California at Berkeley, is an intern at Antic Publishing.

IF YOU'D LIKE MORE ARTICLES LIKE THIS ONE, CIRCLE **239** ON OUR READER SERVICE CARD.

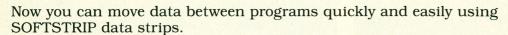
II Computing's Teacher/Parent Tips offer lesson plans to enhance and extend our type-in programs. See the pull-out section in the middle of this issue for lesson plans for DVORAK'S KEYBOARD.



DVORAK KEYBOARD



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FEBRUARY CASE HISTORY

Elroy Bond, Vice President and Director of Data Processing at Golden State Mutual Life Insurance had a problem with data transmission. The difficulty was his telecommunications equipment. No matter how reliable and easy-to-use his PC based system was, if the phone lines were down or his PC operator was ill, he would end up sending disks through the mail from their branch offices in Winston-Salem, N.C. and Compton, Westwood, and Los Angeles, CA. Besides the hassle of copying a disk and using a disk mailer, there was always the possibility of having to resend the disk because of damaged data.

Now the branch offices each have their own copy of the STRIPPER™ printing program. When their modem based system fails to operate, they just send a document in data strip format. Bond is planning on installing SOFTSTRIP Readers at every location, so that when he updates their software, all he has to do is print out a data strip document on his Epson printer, photocopy it and mail it in an envelope for 22 cents.

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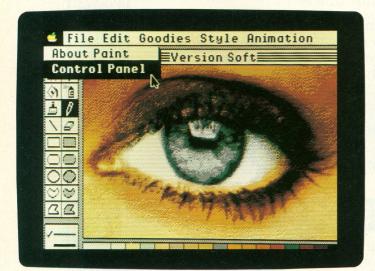
This data strip contains IBM2MAC, a utility that runs on the IBM and converts an IBM file to Macintosh format.

CIRCLE 007 ON READERS SERVICE CARD

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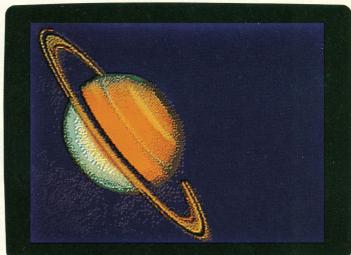




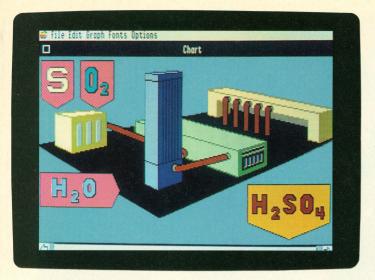








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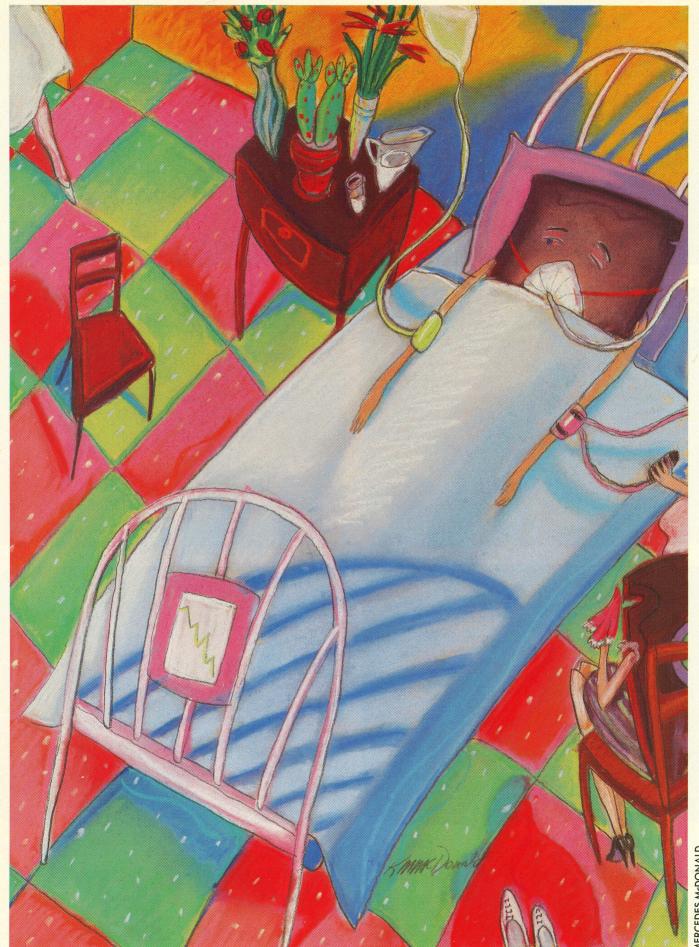
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MERCEDES McDONALD

What To Do When Your Disk Dies

by ROBERT GROSSBLATT

What can you do when your Apple II gives you the dreaded "I/O Error" message? Bob Grossblatt gives some advice and looks at how to use disk utilities to restore demolished disks when you can least afford them.

Everybody agrees that computers save all kinds of time and brain damage, right? Well, picture this: It's tax time and you've got your whole business organized on a floppy disk. In comes your accountant (at a hundred bucks an hour), you load the software, put in the data disk, punch a few keys, and after a few seconds—I/O ERROR.

If you're smart, you've got at least one backup, so everything's okay. If you're out of backups, you're also out of luck. You get a huge bill from your accountant and wind up paying a small fortune to the IRS. Cash flow dries up, credit vanishes, and your business goes belly-up. All because a few disk bytes went astray.

The moral here is simple: no matter how careful you are, disks sometimes go south and take the data with them. If you routinely back everything up, a dead disk is a minor inconvenience, but if you don't, you're looking for trouble.

FOUND: TROUBLE

Suppose the day comes when the one and only copy of your business records or your Great American Novel is stored on an unreadable disk. You've gone looking for trouble, and now you've found it.

Before you do anything else, make sure that the problem really is with the disk, and not just in the disk drive. You can do that by trying to read the file with a different drive. If you can read the file with one drive and not the other, take no chances—have the problem drive repaired *immediately*. A flaky disk drive stands a good chance of destroying disks, gumming up your data and generally making your life more miserable as time goes by.

All right—you've tried another drive, and you still can't read the disk. Things may look bleak, but you may not be entirely out of luck. There *are* some things you can try to recover it.

Your first step in any attempt at disk recovery should be to make a copy of the disk. If your software can't read the disk, a standard copy program like COPYA won't be able to either, and you'll need one with a bit more juice. Both Locksmith and Copy II Plus are perfect for the job. Don't give in to the temptation to try fixing the original disk. Remember that it's the only disk in the world with the data you want.

There's a chance that copying the disk will solve the problem. Some disk errors are due to defects in the disk itself—bad spots that ordinary programs might have trouble reading, but copy programs have better luck with. Try reading the data from the copy. If the copy you've made is readable, back it up and use it. Then use the original

disk as a frisbee - that's all it's good for.

If you still can't read the files once you've made a copy, your next step is to isolate the problems as much as possible. Format a blank disk and copy all the files from the original disk, one file at a time. However boring it may be, sit and watch the screen as it happens. If you get an error, restart the copy operation, skipping the damaged file.

What you're doing is seeing exactly which of the files have unreadable data. Once you know which files are damaged, you can try copying them from your copy of the damaged disk. This isn't really as silly as it sounds, since some copy programs will fill sectors with 00s if they can't read the original data. The Fast Disk Copy feature of Locksmith makes it a perfect program to use for this. It's also the fastest disk copy program on the market - 16 seconds if you've got extra memory. If you're lucky, you'll be able to read the file from the copy. There may be some garbage in it, but you'll only have to fix a part of the file rather than reconstruct the whole thing from scratch.

There are different copying programs for the different operating systems you can use on your Apple II. For example, there's FID for DOS 3.3, the ProDOS System Utilities and CP/M's PIP. There are also commer-

continued on next page

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cial copying programs that can help tremendously when you're trying to repair a damaged disk—some of them are listed, with their features, in Table 1.

DEEPER INTO THE LABYRINTH

Table 1

Let's say the file you need has so many damaged sectors that there's no way you can reconstruct the data from the tify the bad file. Even if your software has an option to copy files to a standard disk, you more than likely won't be able to do it since the program can't read the file in the first place.

But if your software uses a standard operating system, you have a better chance. Still, the task is far from simple. One of the nicest things about the Apple II is that you're not locked into But the general principle of what an operating system does is the same for all of them. To give you an idea of how they work, let's take a close look at DOS 3.3.

There are three major tasks an operating system has to handle when it deals with data storage: listing the file's name, finding space for the file on the disk, and marking that space as used. In DOS 3.3 the name is kept in the catalog, the location is stored in the file's Track/Sector List (T/S List), and the space is reserved in the Volume Table of Contents (VTOC). If you want to read data from the disk, your part of the operation is simple—you give DOS a file name and hit a key. As soon as you do that, DOS goes to work.

It reads the VTOC to see where the first sector of the catalog is located, goes there, and looks for the file name you want. If it's not there, it looks through the rest of the catalog. Once the name is found, it reads the catalog entry to find where the T/S List for the file is stored on the disk. This is a sequential list of each sector containing the file data. DOS gets the location of the first data sector, goes there and reads the data into the Apple, and then goes back to the T/S List for the second sector. This happens over and over again until it reaches the end of the file.

Writing data is pretty much the same thing, but DOS has two other jobs. Before it writes the data it has to put the file name in the catalog and check the VTOC to find free disk sectors. It creates a T/S List and writes the data sector by sector. As it's doing this, it records the sector in the T/S List, reserves it in the VTOC, and then writes data in the sector. This continues until it sees an end-of-file marker. If DOS runs out of space before the end of the file, it gives you a DISK FULL message and leaves you with a partially written file. These extra operations are why a disk write takes so much longer than a disk read.

If you've accidentally erased a file under DOS 3.3, you can easily recover it as long as nothing else has been written to the disk since the file was erased. When DOS deletes a file, it only changes the first byte in the catalog entry to an FF. This byte originally contained the track location of the file's

RECOMMENDED DISK UTILITIES

PROGRAM	R	EADS FILES FO	AUTOMATED	DISK		
NAME	DOS	PRODOS	PASCAL	CP/M	RECOVERY?	FORMAT
Copy II Plus Central Point Software 9700 S.W. Capital Hwy, Ste. 100 Portland, OR 97219 64K; \$39.95 (503) 244-5782 CIRCLE 253 ON READER SERVICE CARD	X	X			NO	PRODOS
Locksmith 6.0 Alpha Logic Business Systems 4119 North Union Road Woodstock, IL 60098 48K; \$79.95 (815) 568-5166 CIRCLE 254 ON READER SERVICE CARD	X	X			NO	DOS
ProByter Beagle Bros. 3990 Old Town Ave. San Diego, CA 92110 64K; \$34.95 (619) 296-6400 CIRCLE 255 ON READER SERVICE CARD	X	X			NO	PRODOS
Bag of Tricks II Quality Software 21610 Lassen St. #7 Chatsworth, CA 91311 64K; \$49.95 (818) 709-1721 CIRCLE 256 ON READER SERVICE CARD	X	X	X	X	YES	PRODOS
Disk Repair Kit Penguin Software P.O. Box 311 Geneva, IL 60134 48K; \$12.95 (312) 232-1984 CIRCLE 257 ON READER SERVICE CARD	X				YES	DOS
RecoverTx Palos Computer Concepts P.O. Box 560 Palos Park, IL 60464 CIRCLE 258 ON READER SERVICE CARD			X		YES	PASCAL

copy. It is a fact of disk life that the further you have to go in trying to recover data, the less your chances of success. But you still have some options open.

If the software you used to create the file uses its own nonstandard data disks, things are complicated, since your program is probably the only one in the whole world that uses that type of file. All you can do is use the file copy option of your program to iden-

one operating system. ProDOS is now Apple's official operating system, but DOS 3.3 will be around for a long time, PASCAL is still healthy and CP/M is terrific. The mechanics of data recovery differ in each operating system. Since all the systems use the same hardware, data is physically written to the disk in the same way. The problem is that each has a different way of organizing data and managing files.

T/S List; the sector location is kept in the second byte, and this is unchanged. Just to play it safe, DOS 3.3 also copies the T/S List track number to the end of the file name. So it's a simple matter to "undelete" a file; many of the utilities in the table can do it automatically.

GETTING TO WORK

The most common cause of disk death is a bad byte or two in the catalog, VTOC, T/S List or a data sector. If the operating system can't figure out what's going on, it will tell you you have an I/O error, which can leave you with the understatement of the year—I/O ERROR. When that happens, to save your disk you may have to go in to correct those bytes.

If disk details are new to you, get a copy of Pro-Byter from Beagle Brothers. The software is excellent but the manual is better. It's a good introduction to the disk as well as being fun to read. Once you've got a handle on the basics, buy a copy of Beneath Apple DOS or Beneath Apple ProDOS, published by Quality Software. These books have become standard reference texts, and the more you understand about the disk system, the better you'll be able to use the rest of the disk utilities listed in the table. Which software you should choose depends on the operating system you use and how patient you are.

The utilities listed in the table should help you repair a file if that's possible - but what if a file is too badly damaged to reconstruct? If you've been conscientious about periodically saving your data, there's a chance you may find an earlier version of the damaged file on the disk. It won't be in the catalog, and DOS, ProDOS or the other systems won't know the data is still on the disk, but if you're lucky, you'll be able to get a good portion of the data back. Both Bag of Tricks and the Disk Repair Kit take advantage of the fact that a T/S List sector has a definite format. Remember that a deleted file is still on the disk and its associated T/S List sector is still there also. It's possible to recover data by going on a sectorby-sector safari through the entire disk, looking for T/S Lists.

When you find one that's not listed in the catalog, you're looking at the ghostly skeleton of a file that once existed on the disk. It may be that the sectors listed there have been overwritten with new data, but if the disk is fairly empty, there's a good chance that some of the original data is still there. The old file's catalog entry is gone so the name of the file is history, but both Bag of Tricks and Disk Repair Kit will let you look at the data and automatically save it under the name of your choice. Now that you've got it in standard form, you can see whether this automated data recovery was successful.



BEAGLE BROS' PROBYTER

But let's be pessimistic. Let's say that you've tried everything we've been talking about and nothing's worked - you haven't even been able to copy the original disk. There you are, staring at a floppy that has some data on it - stored you don't know where on the disk. Let's further say that you've blown up the catalog and the VTOC, and it seems that every T/S List has disappeared. This is the sort of thing that might happen if you inadvertently reformat an active data disk and stop it halfway through. Now this is really a serious state of affairs. Half the disk has been wiped clean and you don't have the vaguest idea of what's left on the rest of it.

Your only hope is a brute force approach to data recovery. Since all the normal roadsigns—in the catalog, VTOC and T/S Lists—have been wiped out, all you've got left is a disk with some sectors full of data including, you hope, data you need. Unfortunately, there's no software in the world that can look at a sector full of data and tell you whether or not it's what you want. If you get to this point in trying to recover data, your only option is to eyeball every sector. This is the one and only time that Apple's 143K floppy disk size is an advan-

However you decide to go about the task of data recovery, it pays to be systematic. Here are the steps you should take to make the job as painless as possible.

- 1. Make certain the problem is with the disk, not the disk drive.
- 2. Make a copy of the damaged disk using a disk utility.
- 3. See if your software can read the files from the copy. If the error you get reading the copy differs from the error on the original, try copying the disk again.
- 4. Transfer the files from the damaged disk to a fresh disk one at a time, and see which files are damaged.
- 5. See if an automatic-repair utility like Bag of Tricks or Disk Repair Kit can repair the damage. (Make sure you do this to the copy, not the original disk.)
- 6. Try finding a previous version of the bad file by looking for Track/Sector Lists.
- 7. If your data was stored as ASCII text, do a sector-by-sector search through the disk for the data.
- 8. Check with your software's publisher to see if they offer a data recovery service.
- 9. Kiss your data goodbye.

tage—less capacity means fewer sectors to scan.

With the exception of the Disk Repair Kit, the software in the table will let you look at the sectors on the disk and save some of them in a file. The procedure to do this is clearly spelled out in the manuals; if you use Bag of Tricks the whole process can be reduced to a single keypress macro. Assuming the data is there to be found, your chances of success are directly related to your ability to recognize the data you want.

And that's not as simple as it sounds.

continued on page 36

WE BEAGLE COMPILER

\$74.95 (for any Apple II-64K min.) | by Alan Bird

Machine-Language Speed for Applesoft Programs

oot THE BEAGLE COMPILER and then run practically any Applesoft BASIC program from disk. The program will be converted on the spot, in seconds, to run at machine language speed.

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Coming soon: MINIPIX DISK#3 and Minipix for THE NEWSROOM.TM

\$34.95 (for any Apple IIe, IIc or IIGS) by Fred & Sara Crone, Matt Reimer, Bert Kersey and Rob Renstrom

EAGLE SCREENS will get <u>your</u> message across-anything from "Happy Birthday" to "Hands Off"- in a unique and colorful way. Use our pictures to add a touch of class to your Apple programs or presentations.

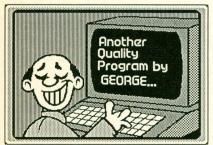
Or just use them to show off your Apple. You get forty captionable full-screen pictures on disk (samples shown here). Half of the pictures are automatically animated as soon as you put them on the screen.



Each picture has a blank area (or "balloon") where you can add your own message.

We make it EASY to add your own words and create colorful on-screen "slide shows".

Or print the pictures up as unique signs. (Printing requires a dot matrix printer and any standard printer software like Triple-Dump.)



It's easy-just type the message on the screen, and save the picture on disk.



Choose from a dozen caption typestyles to give your messages variety. Beagle Screens is compatible with Font Mechanic fonts too.

AUTO-ANIMATION

Animation gives your messages extra punch. Twenty Beagle Screen pictures are automatically animated as soon as you load them onto the screen.

by Mark Simonsen & Rob Renstrom

RIPLE-DUMP combines with your dotmatrix (graphics-capable) printer and any Apple II to print:

- Hi-res graphics
- Double Hi-res graphics
- Lo-res graphics
- Double Lo-res graphics
- 40-column text
- 80-column text

Make "hard copies" of all kinds of images with absolutely no programming knowledge

Or, if you're a programmer, use Triple-Dump's routines in your Applesoft programs.

Triple-Dump offers picture cropping, rotating and magnifying, plus the ability (on many printers) to adjust the print density.

Print giant (8"-high letters) text banners on any printer. Great for special occasions!

BUY BEAGLE PRODUCTS AT YOUR SOFTWARE STORE.

If your dealer is out of a particular disk, get on his case. Tell him he can have any of our products in his store for you within a couple of days by contacting any major Apple software distributor. Or by phoning Beagle at 619-296-6400.

> Or you can order by mail (we ship fast!): Call Toll Free (orders only-Mon.-Fri., 9am-4pm Pacific time): 1-800-345-1750 (Calif. 1-800-992-4022). Visa, MasterCard or COD(or mail a U.S. check). Add \$2.50 shipping (\$5.00 if overseas) +\$3 if COD +6% if California.

BEAGLE BROS, INC.

3990 OLD TOWN AVENUE SAN DIEGO, CA 92110

MACROWORKS

\$34.95 (for AppleWorks version 1.3 or older) by Randy Brandt

Note: New AppleWorks Version 2.0 requires New SUPER MACROWORKS→

ACROWORKS streamlines Apple-Works' word processor with new features. For example, one keystroke now deletes the character or word at the cursor. Another keystroke jumps to the start

or end of a line. Another erases an entire line.

Change your mind? Press \$-U to "undo"

your last delete-command.

New! AppleWorks MOUSE CONTROL

MacroWorks lets you use your Apple's Mouse to control Apple-Works' menus, scrolling, word-block highlighting, and so on.

APPLEWORKS MACROS

MacroWorks will convert any series of keystrokes into a new one-keystroke solid-Apple (*) command. (All open-Apple commands stay intact.)
Use MacroWorks' built-in

macros or define your own. For example, make **\(\mathbf{c}\)**-N type your name and address. Or let \(\mathbf{c}\)-X save or print all of your desktop files, nonstop.

You can set up macros that execute any often-repeated function. You can even skip over unwanted AppleWorks questions like "How many copies?".

JUST BOOT APPLEWORKS, AND GO!

\$39.95 (for any version of Apple II)

by Bert Kersey & Mark Simonsen

MacroWorks is not a time-consuming "pre-boot" disk. To start up, just boot AppleWorks like you always do. Now you've got optional Mouse control and you've got over 4,000 keystrokes-worth of macros at your fingertips.

HAPE MECHANIC converts hi-res

drawings into animatable shapes that

can be put on the screen with simple

Easy "List and Learn demos on

Applesoft commands. It also converts sec-

tions of hi-res pictures into "drawable" shapes.

SUPER MACROW

\$49.95 (requires new Apple Works version 2.0) by Randy Brandt

UPER MACROWORKS provides the same AppleWorks enhancements and improvements as MacroWorks, PLUS:

THE BEST

SINGLE

APPLEWORKS

ADD-ON

AVAILABLE

TODAY."

Oct. 86

...IF YOU USE

APPLEWORKS, BUY

MACROWORKS.

-Editor's Choice

inCider, Aug. 86

—A+ Magazine

Boot AppleWorks and it will get itself up and running without another keypress. It will also automatically load any file that you want.

DIRECTORY DATABASE

Read file names from any or all of your disks into the Apple-Works Data Base.

Now you can sort by file name, type, date, etc., and make printouts, to see what's really in that disk library of yours.

NO MORE TYPING PATHNAMES!

When AppleWorks wants a pathname (another disk or direc-tory), you now select from a menu instead of typing. Simply highlight the name you want-it's just like loading files.

TIME/DATE MACRO

One keystroke prints the current date or time anywhere in Apple-

Works-in any application.

READ-THE-SCREEN MACROS

Convert from lower case to upper and back! Cut and paste anywhere, including from fieldto-field or record-to-record in the Data Base.

LOCAL/GLOBAL MACROS

Define macros that work in one specific application (for example, in the Spreadsheet, but not in the Data Base).

Updates: Mail old MacroWorks manual front cover+\$22.50 to Beagle Bros (add 6% if California).

POWER PRINT

by Rob Renstrom

Works with most full-font downloadable printers, including: Apple DMP and IMAGEWRITER (1 & ID, EPSON (Fx, Jx, Ex), OKIDATA (92, 93, 192, 193), PANASONIC (1092, 1093), STAR (DELTA, RADIX, SD, SG, SR), and more

OWER PRINT lets you "download" a second typestyle into your printer's memory, so you can alternate between your standard printer-font and a custom font with special characters and symbols:

> ABCDabcd6789*6? RBCDE12345 ++++D

OLD ENGLISH

444444444444444444444 BORDER FONTS TOO!

(Custom fonts appear on your printer, not on the screen. Any key can be made to print any character.)

OUR FONTS OR YOURS

Many custom printer-fonts are included on the Power Print disk. An easy-to-use Font Editor lets you redraw any of the characters in our fonts. Or you can design your own custom fonts and special characters from scratch.

You can even design a set of custom characters that combine to print a small illustration like a signature.

Honestly,

Uncle Abe

For a creative touch, print your logo at the top of all of your word processing documents.

FAST-and Compatible with APPLEWORKS

Unlike other printer-font soft-ware, Power Print won't slow your printer down one bit. And it's

compatible with AppleWorks, and most other Apple software.

\$49.95 (for any version of Apple II) by Neil Konzen

PLE is Beagle Bros' "Global Program Line Editor"-stur the Applesoft programs. Line Editor"-still the NUMBER ONE

INSERT AND DELETE characters and words in your basic programs. No more awkward "cursor tracing" to make changes.

SEARCH AND REPLACE: Find every occurrence of any word or variable in a program. Or replace any word with any other.

ESCAPE MACROS: GPLE lets you make Escape-anykey do almost anything you want. For example, Esc-1 can Catalog drive 1. Esc-N can type your name and address, etc.

\$29.95 (for any version of Apple II) by Mark & Jon Simonsen

ONT MECHANIC gives you thirty new hi-res display typefaces compatible with all of the programs on Shape Mechanic, Apple Mechanic and Beagle Screens.



the Shape was anic disk teach you how to create your own hi-res programs. HI-RES TYPEFACES TOO

30 proportionally spaced hi-res screen display fonts-both large and small-are included on the Shape Mechanic disk. Each character may be edited or redrawn as you choose

🗓 🕮 APPLE BROADWAY CHOMP COMPUTE FATSO MOD PENDAN LBFT SOODON BLOCK L.E.D. STENCII. WESTERN 200L00 OUTLINE SOURREBALL SACCED ASTROS BRONDURY COMPUTE

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BEAGLE BROS, INC. 619-296-6400 3990 OLD TOWN AVE., SAN DIEGO, CA 92110 program will even mark the spots where figures should be inserted.

With its extraordinary formatting features, this is a word processor for scholarly tasks. It is a joy to work with, because it was designed with practicality and ease of use in mind.

WORD PERFECT 1.1

If you have been around IBM PCs or their many facsimiles, you may have noticed that the MS-DOS word processor of the day is Word Perfect. Having used it daily for close to two years, I can assure you that it has earned its good reputation. How splendid, then, to find that it is also available in a ProDOS version for the Apple IIe and IIc, and that this version is almost every bit as good as the original.

I say almost, because there is, for example, no thesaurus, it will not generate columns of text or a table of contents, and it cannot perform mathematical calculations or automatic indexing. Other than that, the **Apple Word Perfect** will duplicate any performance of which the IBM version 4.1 is capable (4.2 was recently released, so perhaps a new Apple version is also on the horizon), and if you have experience with the MS-DOS version, you will feel right at home using Word Perfect on an Apple.

Word Perfect supports the most commonly used printers, and allows three to be installed at one time. If your printer is not among the fifty or so whose drivers are furnished, custom installation is possible—though not easy. The same goes for interface cards, of which 23 are listed.

One of this program's most useful features is macros, which are easily defined by the user. Macros are a form of automation, one uses them to record an entry or series of entries. If you were writing an article on nuclear disarmament, you might want "nuclear disarmament" to appear with one keystroke, or you could create a macro that automatically sets up certain parameters. The feature is akin to Apple Writer II's WPL, but easier to implement.

Word Perfect has earned its good reputation.



WORD PERFECT 1.1

Compared to the MS-DOS version, the Apple Word Perfect is slow, but not agonizingly so; however, this is nothing that an accelerator card can't cure. There is, on the other hand, no cure for the program's dependence on disks for temporary file storage. On the one hand, basing the maximum file length on disk capacity increases it, but it also makes it impossible to swap disks in midstream, and-because text that exceeds memory space is automatically written into a temporary disk fileone must allow the program to perform a cleanup by exiting it in a prescribed manner. You'll get used to it.

Word Perfect is crammed with good, practical features; it is easy to learn (template and Quick Reference card are furnished), and it has the added advantage of also being available for the IBM, which makes life a lot easier for those of us who find ourselves working with both machines.//

Chris Albertson, a contributing editor to Stereo Review, has been writing about jazz since 1953; his involvement with computers, particularly word processors, dates back to 1979. He lives in New York City.

WHEN YOUR DISK DIES continued from page 33

If you're sniffing around for an ASCII file, you'll probably be able to spot your data when it shows up on the screen. The further away from ASCII your data gets, the worse off you are. If a program uses an encoded system to store data on the disk, you'll see a screenful of gibberish. All you can hope to do is get some information from the people who wrote the program on how they encode their data. If you manage to understand their system, you can go back to the disk and try to handtranslate what you see, but it's not easy. You may find that the publisher will attempt data recovery for you, but it will cost you something. Once you get to this stage of the game, you're often better off recreating the data.

BACK IT UP!

You probably realize by now that the best protection against data loss is a systematic approach to saving and resaving files. The easiest way to recover data will always be to copy it from a backup disk.

Banks and insurance companies spend as much money backing up all their records as they do collecting them in the first place. We're talking here about millions of dollars. You can get floppies for less than fifty cents apiece and back up a disk in less than twenty seconds. That's an awfully cheap price for peace of mind.//

Robert Grossblatt contributes to Radio Electronics and other publications. He lives in New York City.

PRODUCT INFORMATION

Beneath Apple DOS
Beneath Apple ProDOS
Quality Software
21610 Lassen St. #7
Chatsworth, CA 91311
(818) 709-1721
\$19.95 each
CIRCLE 257 ON READER SERVICE CARD

IF YOU'D LIKE MORE ARTICLES LIKE THIS ONE, CIRCLE **252** ON OUR READER SERVICE CARD.

SOFTWARE LIBRARY

Il Computing's type-in listing section includes every full-length program from this issue. Since they're included all together, it's easy to remove and save them in a binder if you wish. All programs work with both DOS 3.3 and ProDOS unless otherwise noted.

—Special Notes for Action Disk Users NO MORE TYPING!
—Beginner's Page
IF ALL THIS IS NEW TO YOU
-Type Your Program Once! TYPO II MAKER
-Advanced Computer Concepts BEAUTIFUL REPETITION
—Can You Keep a Secret? MESSAGE CODER
—A Little Light Typing DVORAK'S KEYBOARD
-Analyze Your Writing TEXT APPEAL
—Fancier Printouts MULTI-COLUMN PRINTER
—Help for Your 1986 Taxes INCOME TAX SPREADSHEET
—Corrections for Previous Issues II ERR IS HUMAN
—Instant Program Loading CAUZIN SOFTSTRIP

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FEBRUARY / MARCH 1987

TYPO II (TYPE YOUR PROGRAM ONCE)

TYPO.II is the automatic proofreading program for *II Computing*'s Software Library. It generates a two-letter code for each line in a BASIC program. It also produces a total checksum for the entire program. When you use TYPO.II, it should give you the same letter codes and checksum that appear in the Typo II Table for that program. If it doesn't, you've mistyped a line.

To use TYPO.II, type in the program on this page and then SAVE it as TYPO.II.MAKER. Then type RUN TYPO.II.MAKER. This creates a text file called TYPO.II, which is the actual proofreading program.

Now, for each BASIC program you want to use from the Software Library:

1. Type in the BASIC program. Be sure to include all REM and DATA statements, and all spaces within quotes. When the program is complete, SAVE it on disk.

Then LIST the program to make sure it's still in memory. 2. Type EXEC TYPO.II and press RETURN. A list of two-letter codes and the total checksum will be printed on the screen. (You can send this information to your printer by typing PR#1 before you type EXEC TYPO.II.) Compare the codes and checksum to those printed in the program's Typo II Table, listed with it in the Software Library.

3. If a two-letter code does not match the code in the Typo II Table, correct the BASIC program line. If the total checksum does not match, make sure that every line is in the program. Then type EXEC TYPO.II and check the codes and checksum again. Repeat the process until all the codes and the checksum match.

Then SAVE the corrected type-in program to disk. It's now free of typing errors and ready to run!//

```
10 DS - CHR$ (4)
20 PRINT DS; "OPEN TYPO.II": PRINT
    D$; "WRITE TYPO.II"
30
    LIST 63000,63150
    PRINT "RUN 63040": PRINT DS;
    "CLOSE"
50 NEW
63000 REM * TYPO II, VERSION 1.
63010 REM * BY GERRY VILLAREAL
    AND FRANK HAYES
63020 REM * (C) 1985, 1986 ANTI
    C PUBLISHING INC.
63030 REM * II COMPUTING
    HØ TEXT : HOME : PRINT SPC(
11); "CODE", SPC( 5)"LINE NO.
": POKE 34,1
                              SPCC
63042 DEF FN PK(X) = PEEK (X)
     + 256 * PEEK (X + 1)
63050 CH = 0:S = FN PK(103)
```

```
63060 \text{ S1} = \text{S} + 3:\text{N} = \text{FN PK(S):L}
    INE = FN PK(S + 2): IF LINE
     - 63000 THEN 63140
63070 LV = 0: FOR A = 1 TO 255
63080 C = PEEK (S1 + A): IF C =
    0 THEN 63100
63090 LU = LU + C * A: NEXT A
63100 CODE = LU - INT (LU / 676
    ) * 676
63110 HCODE - INT (CODE / 26):L
    CODE = CODE - HCODE * 26
63120 PRINT SPC( 12); CHR$ (HC
    ODE + 65); CHR$ (LCODE + 65)
     ; SPC( B); LINE
63130 CH = CH + LU + LINE:S = N:
     GOTO 63060
63140 PRINT SPC( 7); "TOTAL CHE
    CKSUM = "; CH: POKE 34,0
63150 DEL 63000,63150
```

II ERR IS HUMAN

The states-and-capitals game STATES in our December/ January 1987 issue works fine. Unfortunately, the information in some of the DATA statements for the game is incorrect; we spelled the capital of Wyoming incorrectly, and we named the wrong cities as the capitals of Alabama and Kansas.

While the entire *II Computing* staff studies up for next week's geography pop quiz, here are the changes you'll need to correct the program:

```
1000 DATA "ALABAMA", "MONTGOMERY"
1150 DATA "KANSAS", "TOPEKA"
```

1490 DATA "WYOMING", "CHEYENNE"

A funny thing happened on the way to the typesetter . . . We printed an error in II ERR IS HUMAN in our December/January issue. The corrections for ORRERY are as follows:

```
555 KEY = PEEK ( - 16384): IF KEY > 127 THEN POKE - 16368,0: GOTO 960 945 IF V > DY THEN GOTO 960
```

That should do it.//

BEAUTIFUL REPETITION

Article on page 66

HILBERT CURVE

```
10
    REM * HILBERT CURVE
20
    REM * BY DANIEL WOLF
    REM * COPYRIGHT (C) 1986
    REM * ANTIC PUBLISHING, INC.
    REM * II COMPUTING VOL.2 NO.
50
    ONERR GOTO 9000
60
    FOR J = 1 TO 6
110 JQ = J: IF JQ > 3 THEN JQ =
    JQ + 1
120
    HGR : HCOLOR= JQ
130 \ Q = 64 \ / \ (2 \ ^J)
140 T = -1:P = 0:X = 1:Y = 0:R
150
     PLOT X, Y
    PRINT : PRINT
160
     PRINT " HILBERT CURVE", J
170
180
     GOSUB 1000
190
     FOR CQ = 1 TO 2000: NEXT CQ
200 NEXT J
210 END
1000 R = R - 1:T = -T:Z = Q:Q
     - T * P:P = T * Z
1010 IF R > 0 THEN GOSUB 1000
1020 L = X + 2 * P:M = Y + Q: GOSUB
    2000
1030 T = - T:Z = Q:Q = - T * P
    :P = T * Z
1040 X = L:Y = M: IF R > 0 THEN
     GOSUB 1000
1050 L = X + 2 * P:M = Y + Q: GOSUB
1060 X = L:Y = M: IF R > 0 THEN
     GOSUB 1000
1070 Z = Q:Q = - T * P:P = T *
    Z:T = -T:L = X + 2 * P:M =
```

```
Y + Q
1080 GOSUB 2000
1090 X = L:Y = M: IF R > 0 THEN
    GOSUB 1000
1100 Z = Q:Q = - T * P:P = T *
   Z:T = -T:R = R + 1
1110
    RETURN
     HPLOT 2 * X,2 * Y TO 2 * L
     HPLOT 2 * X + 1,2 * Y TO 2
     * L + 1,2 * M
2020 RETURN
    PRINT "ERROR #" PEEK (222)
9000
    " IN LINE #" PEEK (218) + 25
    6 * PEEK (219)
```

TYPO II TABLE

Code	Line#	Code	Line#	Code	Line#
PI	10	нС	160	TU	1050
RB	20	RU	170	HD	1060
TJ	30	GS .	180	VA	1070
UJ	40	SK	190	GU	1080
IO	50	KS	200	HD	1090
BU	60	EY	210	KM	1100
NU	100	SM	1000	GV	1110
EM	110	DP	1010	VO	2000
BW	120	TU	1020	FY	2010
RG	130	AP	1030	GU	2020
MZ	140	HD	1040	LZ	9000
EZ	150				

Total checksum = 592555

JULIA SETS

- 10 REM * JULIA SETS
 20 REM * BY DANIEL WOLF
 30 REM * COPYRIGHT (C) 1986
 40 REM * ANTIC PUBLISHING, INC.

 50 REM * II COMPUTING VOL.2 NO.
 3
 60 ONERR GOTO 9000
 100 PRINT : PRINT
- 110 PRINT " JULIA SET DATA ENTR
 Y": PRINT

 120 INPUT " REAL (X) CONSTANT:
 "; RX

 130 INPUT " IMAGINARY (Y) CONST
 ANT: "; IX

 140 INPUT " WIDTH: "; W

 150 INPUT " MAXIMUM REPETITIONS
 : "; CM

continued on next page

```
160
     HGR
170
     HCOLOR= 6
180 HPLOT 0.0: CALL - 3082
    PRINT : PRINT : PRINT " JUL
190
    IA SET "; RX; " "; IX; " "; W; "
      "; CM
200 XI = W / 140:YI = W / 160:XM
     = 139:YM = 159
210 SX = 0:SY = 0
220 SZ = 4: REM SIZE LIMIT OF
     (X, Y)
230 \text{ BY} = -1 * (W / 2):BX = BY
240 X0 - BX:Y0 - BY
250 X = X0:Y = Y0
                  REPETITION COU
260 CT = 0: REM
    NT
270 A = X * X:B = Y * Y:C = 2 *
280 X = (A - B) + RX:Y = C + IX
290 A = X * X:B = Y * Y:C = 2 *
    X * Y:CT = CT + 1
    IF A + B < SZ AND CT < CM THEN
300
    280
     REM SIZE OF (X,Y)=A+B !!
310
320
     IF CT = CM THEN HCOLOR= 7:
     GOTO 340
330
     HCOLOR= 4
340 \text{ OX} = \text{XM} - \text{SX} : \text{OY} = \text{YM} - \text{SY}
350 HPLOT 2 * SX,SY: HPLOT 2 *
    SX + 1, SY
360 HPLOT 2 * OX, OY: HPLOT 2 *
    OX + 1, OY
370 \text{ SX} = \text{SX} + 1: \text{X0} = \text{X0} + \text{XI}
380 IF SX < = XM THEN 250
390 SX = 0:X0 = BX:SY = SY + 1:Y
    0 = Y0 + YI
400 IF SY < = (YM / 2) THEN 25
410 TEXT : HOME : END
1000
     REM * FOLLOWING ARE SAMPLE
     DATA
1010 REM * .32, .043, 2.3, 128
1020 REM * .11031, -.67037, 2.8, 3
```

1030	REM	* .273	34,.0	0742,	2.6,12
8					
1040	REM	* GENE	RALLY	WIL	E> HT
1050	REM	* AND		WIL	2< HTC
1060	REM	* #REP	S FRO	3E M	- 256
1070	REM	* REAL	. (X)	-2.5	TO 2.5
1080	REM	* IMAG	(Y)	-2.5	TO 2.5
1090	REM	* FOR	MORE	COLOR	RS, ELI
M	INATE	LINE	240		
9000	PRIN	T "ERF	ROR #"	PEE	(555)
"	IN L	INE #"	PEEK	(218	3) + 25
6	* P	EEK (219)		

TYPO II TABLE

Code	Line#	Code	Line#	Code	Line#
RE	10	UG	210	ZU	370
RB	20	VC	220	us	380
TJ	30	SS	230	QX	390
UJ	40	LI	240	OX	400
IO	50	MQ	250	IS	410
BU	60	LH	260	TA	1000
HC	100	UU	270	WO	1010
BJ	110	WG	280	AD	1020
XJ	120	PD	290	CZ	1030
ED	130	HD	300	AO	1040
IU	140	BE	310	FF	1050
RE	150	GY	320	FL	1060
FP	160	Jū	330	OZ	1070
JU	170	DH	340	OE	1080
MK	180	XC	350	MB	1090
WS	190	QQ	360	LZ	9000
RU	200				

Total checksum = 914267

MESSAGE CODER

Article on page 23

10 REM * MESSAGE CODER
20 REM * BY CHARLES BELL
30 REM * COPYRIGHT (C) 1986
40 REM * ANTIC PUBLISHING, INC.

50 REM * II COMPUTING VOL.2 NO.
3
60 ONERR GOTO 9000

100 HOME: UTAB 6: HTAB 7: PRINT
"YOUR PERSONAL CODE MACHINE"
: UTAB 21: INVERSE: PRINT"
PLEASE MAKE SURE CAPS LOC
K IS DOWN ": NORMAL: GOSUB
990

110 D\$ = CHR\$ (4)
130 DIM Z(90), Y(90), A\$(90), B\$(9)

2

```
0),L(256),L$(100)
    HOME : HTAB 3: VTAB 5: PRINT
    "ARE YOU": HTAB 8: UTAB 8: PRINT
    "C) DDING": HTAB 12: UTAB 10:
     PRINT "OR": HTAB B: UTAB 12
    : PRINT "D)ECODING"; : GET OS
    IF OS < > "C" AND OS < >
150
    "D" THEN PRINT CHRS (7): GOTO
    140
    IF OS = "D" THEN 1480
160
170 IF S = 0 THEN GOSUB 850
180 SP = 0: HOME : UTAB 10: PRINT
    "WILL YOU USE SPECIAL CODE N
    AME OPTION?":: GET AS: IF AS
     = "Y" THEN SP = 1
190 HOME : UTAB 6: PRINT "WHEN
    CURSOR APPEARS, YOU MAY BEGI
    N": PRINT "TYPING YOUR TEXT.
    ": PRINT : PRINT " (STOP WHE
    N WARNING BELL RINGS)": PRINT
    :B$ = "":C$ = "":Z$ = ""
    PRINT : PRINT "HIT CARRIAGE
200
    RETURN WHEN FINISHED.": WD -
    0:CT - 0:W - 0:WCS - "":WDS -
    PRINT : FOR I = 1 TO 90:Z(I
210
    ) = 0:Y(I) = 0:L(I) = 0: NEXT
    GET CS: IF CS - CHRS (8) AND
220
     LEN (B$) - Ø THEN 220
     PRINT CS;
225
227
    IF CS - CHRS (B) AND LEN
    (BS) - 1 THEN BS - "": PRINT
    " "; + CHR$ (8);: GOTO 220
    IF CS - CHRS (8) THEN BS -
230
    LEFTS (BS, LEN (BS) - 1): PRINT
    " " CHR$ (8);: GOTO 220
    IF CS = " " AND OS = "D" THEN
240
    550
    IF CS = " " THEN W = W + 1
250
260 L = LEN (B$): IF L > (236 -
    W * 2) THEN PRINT
                        CHR$ (7)
270
     IF CS = CHRS (13) OR L > (
    244 - W * 2) THEN 290
280 B$ - B$ + C$: GOTO 220
    FOR I - 1 TO L: IF MIDS (B
290
    $, I, 1) < > " " THEN CT - CT
     + 1: GOTO 350
300 IF MID$ (B$, I - 1,1) = " "
     THEN 350
310 WD = WD + 1: IF CT > 9 THEN
    340
320 X = INT (RND (1) * 58) + 3
    3: IF X > 47 AND X < 58 THEN
    320
330 \text{ WDS} = \text{WDS} + \text{CHRS} (X)
340 WDs = WDs + STR$ (CT):CT =
    NEXT I
350
```

IF WD = 0 THEN WD = 1:WDS =

360

```
"K" + STR$ (CT)
370 WC$ = STR$ (WD): IF WD < 10
    0 THEN WCS = "0" + WCS: IF W
    D < 10 THEN WCS - "0" + WCS
380 WD$ = WC$ + WD$
390 CL$ = B$
400 FOR I = 1 TO L: IF MIDS (B
    $, I, 1) < > " " THEN 420
410 BS = LEFTS (BS, I - 1) + RIGHTS
    (BS, LEN (BS) - I)
420
     NEXT I
430 L - LEN (BS)
440 IF S = 1 THEN 550
450 PRINT : PRINT "GENERATING C
    ODE . . . "
460 R = INT ( RND ( - C))
470 FOR I = 33 TO 90
480 Z(I) = INT ( RND (1) * 58) +
    33: IF Y(Z(I)) = 1 THEN 480
490 Y(Z(I)) = 1
500 \text{ AS(I)} = \text{CHRS}(I)
520 B$(I) - CHR$ (Z(I))
    NEXT I
540
550 IF OS = "D" THEN 25 - BS: GOTO
    690
560 B$ = WD$ + "
                  " + B$
570 FOR I = 1 TO LEN (B$): IF
     MIDS (BS, I, 1) = " " THEN 60
580 A = ASC (MID$ (B$, I, 1))
590 X$ - B$(A): Z$ - Z$ + X$
600 NEXT
610 IF SP = 1 THEN PRINT : GOSUB
    1290
   PRINT : PRINT "HERE IS YOUR
620
     CODE: ": PRINT
     FOR I = 1 TO LEN (ZS)
630
640
    PRINT MIDS (25, 1, 1);
650
     IF I / 5 = INT (I / 5) THEN
     PRINT "
             ".
     NEXT I: PRINT
660
    PRINT D$; "PR# 0": PRINT : PRINT
670
    "TEST DECODE?"; : GET AS: IF
    A$ < > "Y" AND A$ < > "N" THEN
    670
     IF AS = "N" THEN 790
680
690
     PRINT
     PRINT : PRINT "DECODING: ": PRINT
700
    : PRINT
710 C$ = "": FOR I = 1 TO LEN (
    Z$)
720 AS = MIDS (25, I, 1): IF AS =
     CHR$ (13) OR A$ = " " THEN
    770
    FOR J = 33 TO 90
730
    IF AS < > BS(J) THEN 760
750 \text{ CS} = \text{CS} + \text{AS}(\text{J})
     NEXT J
760
     NEXT I
770
     GOSUB 1130
780
790
     PRINT : PRINT : PRINT "DO Y
```

continued on next page

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```
OU WANT PRINTER OUTPUT?": GET
    AS: IF AS - "Y" THEN GOSUB
    940
800
    PRINT : PRINT : PRINT "SAUE
     CODED MESSAGE TO DISK?": GET
    AS: IF AS = "Y" THEN GOSUB
    1360
810
    PRINT
820 PRINT DS; "PR# 0": PRINT : PRINT
    "HAVE YOU ANOTHER MESSAGE?";
    : GET AS: IF AS = "N" THEN TEXT
    : HOME : END
830 S = 1: HOME : PRINT "USE SAM
    E MASTER CODE?"; : GET AS: IF
    A$ < > "Y" THEN S = 0
    GOTO 140
840
    HOME : UTAB 5: PRINT "NOW C
    HOOSE THE NAME OF YOUR MASTE
    R CODE": PRINT "FOR THIS MES
    SAGE.": PRINT : PRINT "YOU M
    AY USE ANY KEYBOARD CHARACTE
    RS"
860 PRINT : PRINT "
                        HIT <RE
    TURN> WHEN FINISHED.": PRINT
    : PRINT : PRINT "CODE NAME:
    CALL 64879:M$ = "": FOR N =
870
    512 TO 767: IF PEEK (N) < >
    141 THEN MS - MS + CHRS ( PEEK
    (N) - 128): NEXT
    PRINT : PRINT "CODE NAME IS
    : ": PRINT : PRINT MS: UTAB 2
890 C = 0
    IF MS = "" THEN 920
892
    FOR I = 1 TO LEN (MS)
900 A - ASC ( MID$ (M$,I,1)):C -
    C + A
910
   NEXT
920
    FOR I = 33 TO 90:Y(I) = 0: NEXT
930 GOSUB 990: RETURN
    PRINT : PRINT "PRINTER ON?"
    ; : GET AS: IF AS < > "Y" THEN
     RETURN
     PRINT : PRINT "PRINT CODED
    MESSAGE?";: GET AS: IF AS -
    "Y" THEN GOSUB 1000
    PRINT : PRINT "PRINT CLEAR
    TEXT?";: GET AS: IF AS = "Y"
     THEN GOSUB 1070
970
    PRINT
    PRINT DS; "PR# 0": RETURN
980
    VTAB 23: HTAB 12: PRINT "<<
990
    HIT ANY KEY>>";: WAIT 49152,
    128: POKE - 16368,0: HOME :
     RETURN
1000
      PRINT
      PRINT D$; "PR#1"
1010
1020 FOR I = 1 TO LEN (25)
1030 PRINT MIDS (ZS, I, 1);
      IF I / 5 - INT (I / 5) THEN
1040
```

```
PRINT "
1050 NEXT I: PRINT
1060 PRINT DS; "PR#0": RETURN
1070 PRINT
1080 PRINT DS; "PR#1"
1090 IF OS = "C" THEN PRINT CL
1100 IF OS = "D" THEN GOSUB 11
   30
1110 PRINT
1120 PRINT DS; "PR#0": RETURN
1130 WDS = LEFTS (CS,3):WD = VAL
    (WDS)
1140 LCS = MIDS (CS, 4, WD * 2)
1150 J = 0: FOR I = 1 TO LEN (L
   C$) STEP 2:J = J + 1
1160 LS = MIDS (LCS, I, 1):AC = ASC
    (L$): IF AC < 48 OR AC > 57 THEN
   L(J) = VAL (MIDS (LCS, I +
   1,1)): GOTO 1180
1170 L(J) = VAL ( MIDS (LCS, I, 2
1180 NEXT
1190 K = 1:W = 1:C = 0:HK = LEN
   (WDS) + LEN (LCS)
1200 L = LEN (C$): IF SP = 1 THEN
   L - L - 10
1210 FOR I = HK + 1 TO L
1220 IF W > WD THEN 1240
1230 IF L(W) = 0 THEN C = 0:W =
   W + 1: PRINT " ";
1240 PRINT MIDS (CS, I, 1); :C =
     + 1: IF C = L(W) THEN PRINT
    " ";:C = 0:W = W + 1
1250
     NEXT
1260
     PRINT
1270 RETURN
1290 HOME : UTAB 6: PRINT "NOW
   ADD YOUR CLEAR TEXT.": PRINT
    : PRINT "TYPE EXACTLY TEN CH
   ARACTERS, IN TWO": PRINT "GR
   OUPS OF FIVE."
1300 PRINT : PRINT "(DO NOT USE
    COMMAS, COLONS OR SPACES)":
    GOSUB 990
1310 PRINT : PRINT "TYPE FIRST
    FIVE CHARACTERS (NO SPACES)"
    : PRINT : PRINT "HIT < RETURN
    > WHEN FINISHED.": PRINT : INPUT
    TS: IF LEN (TS) > 5 THEN TS
     - "": PRINT CHR$ (7): PRINT
    "TOO LONG!": HOME : GOTO 131
1320 \ ZS = ZS + TS
1330 PRINT : PRINT "TYPE SECOND
    FIVE CHARACTERS (NO SPACES)
    ": PRINT : PRINT "HIT < RETUR
   N> WHEN FINISHED.": PRINT : INPUT
   TS: IF LEN (TS) > 5 THEN TS
    = "": PRINT CHR$ (7): PRINT
   "TOO LONG!": HOME : GOTO 133
```

continued on page 49

by Sara Armstrong

LKING TEXT WRITER (accompanies article page 10)

Introduction: Word processing is a powerful tool and TALKING TEXT WRITER can help young students learn about it. What's remarkable about this word processor is that it uses speech. Because of the large type and the speech, special ed teachers particularly may want to look at this word processor.

Lesson

To enhance language arts instruc-

Objective:

tion, computer use and word processing for young children.

Prerequisites: None for students. Teacher types in passages for younger children.

Target age:

Grades 1-3 (See below for other uses)

Group size: Small group (Activity I)

2 (Activity II)

Time:

15-20 minutes

Materials:

TALKING TEXT WRITER software;

passages to be entered; blank disks

Activity I:

- 1. Teacher introduces the computer and TALKING TEXT WRITER. Class can discuss word processing, entering, saving and retrieving text, and the special speech qualities of TALKING TEXT WRITER.
- 2. Teacher calls up on the computer a short passage she or he has entered and lets the class hear it.
- 3. Teacher plays the passage again as students try to read aloud with the computer.
- 4. Teacher can ask questions about the sequence of events, what was interesting, what the students would change, and so forth. Teacher may want to make some changes on the spot, and have the class read the edited passage out loud, with the computer.

Activity II:

- 1. Students work in pairs. Each one prepares a short story.
- 2. Teacher shows students how to enter new files. Students take turns entering text, one reading what is to be typed to the other. After each student has finished and saved his or her work, TALKING TEXT WRITER reads the story. Students make changes if they wish.
- 3. Children who are having some difficulty with the decoding process of reading may be encouraged to enter their text at the slow speed. using the option in which TALKING TEXT WRITER says each letter and word as it is entered.
- 4. As students become more efficient, they can enter longer stories, practice spelling words, experiment with 40- and 80-column text, and read more advanced passages aloud with the computer. (Perhaps students from later grades can help with entering passages for the younger students.)

Extensions:

- 1. Older students can use the speech function of TALKING TEXT WRITER as an editing tool for their papers.
- 2. Students can enter and practice spelling words.

PARENTS: TALKING TEXT WRITER, with its speech feature, extends word processing capabilities to young children. You can compose short stories with your children, and together hear the computer read them back. If your child is using TALKING TEXT WRITER in school. you may want to discuss with your child's teacher home activities to enhance school projects.

MESSAGE CODER

accompanies article page 23)

2.

Introduction: Secret messages have been used by people in a variety of situations for a long time. They usually hold a special fascination for children. With this program, students send special communications to friends.

Lesson
Objective:

To learn some ways codes have

been used, and to code and decode

personal messages.

Prerequisites: None

Target age: Grades 4-6 (See below for other uses)

Group size: 1-2

Time: 10–15 minutes per session

Materials: Prepared message; MESSAGE

CODER software; printer optional

Activity I:

1. Teacher introduces the idea of codes and secret messages. Some vocabulary, such as "cipher" and "cryptography" might be mentioned. Some possible questions could include: Why would people want or need to send such messages? Who were the first people to leave or send messages to others? How was it done? (References include The Code and Cipher Book by Jane Sarnoff and Reynold Ruffins, The Cat's Elbow and Other Secret Languages by Alvin Schwartz, Codes and Ciphers by John Laffin.)

- 2. Students are assigned or choose research topics. Fourth grade students may research Native American symbol systems and ways of sending messages. Fifth grade students may want to look at early American settlers—who among them might have needed to send private communications? How did they do it? Sixth grade students may want to concentrate on peoples of other countries and any special code systems that were developed.
- 3. Students finish their research, write reports, and share them with the group,

giving examples of codes and message systems used. Such diverse systems as cave paintings, drum signals, Braille, the use of invisible ink, Morse Code and American Sign Language may be discussed.

4. Students prepare and send messages using the systems they have researched, teaching classmates how to decode the messages.

Activity II:

- 1. Students can work alone or in pairs. They decide on the master code name and a message and enter the information, using the MESSAGE CODER software. The message will have to be printed out or saved to disk.
- 2. The message recipient is informed a message is waiting, and given the master code. He or she types in the coded message (or recalls it from disk), then waits while MESSAGE CODER decodes it. The student may then code a response, following the same procedure as above.
- 3. After all students have taken a turn, the class can discuss this type of coding process. What are some of the things that make it

tedious? Could they be improved? Why or why not?

Extensions:

- 1. Younger children may want to employ such codes as Pig Latin, simple alphabetical or numerical substitutions, or other easy codes, as they encode and decode riddles for each other.
- 2. Older students may develop their own coding systems and use them with other classes, on computer bulletin boards, with distant pen pals.

PARENTS: You can use MESSAGE CODER for some interesting and fun family communications. Use some of the codes mentioned to develop a system. Use special codes for birthday greetings, reminders or any kind of message. Special notes can be left on the bathroom mirror, in lunch boxes, or other interesting places, for other family members.

DVORAK'S KEYBOARD

Introduction: An alternative to the old keyboard format is now available for use! Dvorak enthusiasts say you type faster with it. Try it with your students and find out.

Lesson

To experience and evaluate Dvorak

Objective:

and QWERTY keyboards.

Prerequisites: None

Target age:

Grades 7-9 (See below for other uses)

Group size:

1 - 2

Time:

20-30 minutes online

Materials:

Prepared paragraphs; DVORAK software: TYPERIGHT program

from II Computing October/

November 1986.

Activity I:

- 1. Class does research on QWERTY keyboard, and discusses its findings. DVORAK keyboard is introduced.
- 2. Students pair up, based on typing ability (no ability is fine for this activity!).
- 3. Each member of a pair selects a paragraph of about 100 words.
- 4. Pairs take turns entering their paragraphs, first using the standard (QWERTY) keyboard. Other team member records how long it takes to enter the paragraph. Students discuss what they've done.
- 5. White dots with the DVORAK key names are now placed over the QWERTY keys. Pairs type their other paragraphs; time is recorded.
- 6. Class members discuss their experiences and make comments about which keyboard plan seems to work better and why.

Activity II:

- 1. Students who prefer the QWERTY keyboard, or will be learning to use it, can begin their own training by working with the TYPERIGHT program from the October/ November 1986 issue of II Computing.
- 2. Students who prefer the DVORAK keyboard can begin their own training by working with it, following ideas as presented in the October/November lesson plan.

Extensions:

- 1. Older students can research other keyboard plans (such as the Muppet Learning Keys for young children) and write about why or why not each system works well in its own context.
- 2. Students of several different ages may choose to design a keyboard of their own and write a paper defending its design.

- 3. Younger students may want to write to typewriter, computer, and typing tutor software companies to get information about keyboards, keyboard differences, and software programs, and compare aspects.
- 4. Very young students can increase their spatial awareness typing short words as they look at the DVORAK keyboard on the screen and not the keyboard they are using.

PARENTS: You can discuss your children's experiences with different keyboards, and encourage them to use the one that feels the most comfortable. You may want to experiment with the DVORAK keyboard yourself!

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EXT APPEAL

Introduction: Sentence length, word length, unique words and how many times a word appears in a story contribute to its overall quality. TEXT APPEAL helps students consider these items as they learn to write.

Lesson Objective:

To analyze writing samples and apply these analyses to personal

compositions.

Prerequisites: Rudimentary knowledge of the

computer.

Target age: Grades 9-12 (See below for other uses)

Group size: 1-2

Time: 15-20 minutes per session

Materials: A variety of writing samples; TEXT

APPEAL software.

Activity I:

- 1. Teacher discusses "readability" with whole class. Teacher might ask what factors would contribute to making a piece of writing harder or easier to read, simpler or more complex, more or less interesting and so forth. Word length, sentence length and variety of words will be factors.
- 2. Teacher decides whether students will work alone or in pairs. Each student will select two writing samples. about 100 words in length. Teacher encourages students to select samples which present very different styles-from their class or personal reading.
- 3. Students enter one sample, run the TEXT APPEAL tests, including the Fog Index, and record results.
- 4. Students enter the other sample, making predictions as to the results of the program's analyses.
- 5. Students run the tests and record their results.
- 6. Teacher holds a class discussion after all students have completed their sample runs. Students can share their results and ideas about what makes interesting writing, and whether the TEXT APPEAL tests can predict it.

Activity II:

- 1. Each student enters a writing sample—a short paper-of his or her own, approximately 200 words in length.
- 2. Each student predicts Fog Index factors for the sample.
- 3. Each student runs the TEXT APPEAL program, and records the results.
- 4. Each student edits the short paper where appropriate, and re-runs the Fog Index, until he or she is satisfied with the results.
- 5. Student submits paper for publication in the school newspaper or other journal.

Extensions:

- 1. Younger students (late elementary through junior high) can compare writing samples from favorite juvenile authors through the TEXT APPEAL tests.
- 2. For early elementary students, the teacher can enter a writing sample, run and discuss the test results with the class. The teacher can guide students in suggesting synonyms, increasing sentence length, adding unique words, and substituting words of more syllables. The class may rewrite the sample together, or each student can work on his or her own rewrite.

PARENTS: You can apply the TEXT APPEAL test to your own writing or any writing that your children do for school or publication. Not only are the results interesting, but paying attention to what the program measures can improve clarity and strength of the composition.

Sara Armstrona founded an elementary Montessori school in Hayward, California, where she also teaches. She has evaluated science software for the State of California's "Technology in the Classroom" series and is a graduate student in the Ph.D. program in education at the University of California at Berkeley. She is also an instructor in the Computers in Education certificate program at University of California, Berkeley extension.

IF YOU WOULD LIKE TO SEE MORE ARTICLES LIKE THIS, CIRCLE 273

1340 ZS = ZS + TS
1350 PRINT : RETURN
1360 HOME : PRINT : INPUT "FILE
NAME FOR THIS MESSAGE? ";F\$
1370 PRINT "DO YOU WANT TO SAVE
MASTER CODE NAME": PRINT "I
N THIS FILE?"; : GET AS: IF A
\$ < > "Y" THEN 1390
1380 MC\$ - M\$: GOTO 1400
1390 MC\$ = "(MASTER CODE NAME NO
T SAVED)": GOTO 1400
1400 PRINT
1430 PRINT DS; "OPEN"; FS
1440 PRINT DS; "WRITE"; FS
1450 PRINT CHR\$ (34)MC\$ CHR\$ (
34)"," CHR\$ (34)Z\$ CHR\$ (34)
1460 PRINT DS; "CLOSE"; FS
1470 RETURN 5881
1480 HOME : PRINT "READ CODED M
ESSAGE FROM DISK?"; : GET AS:
IF A\$ < > "Y" THEN 190
1490 HOME : PRINT : INPUT "FILE
NAME OF CODED MESSAGE? "; F\$
1500 PRINT
1510 PRINT DS; "OPEN"; FS
I I J CU F KINI LD; KEHU : F D
1530 INPUT MS, BS
1540 PRINT DS; "CLOSE"; FS
1550 PRINT : PRINT "MASTER CODE
NAME: ": PRINT : PRINT MS
1560 PRINT : PRINT : PRINT "TEX
T: ": PRINT : PRINT B\$
1570 IF MS = "(MASTER CODE NAME NOT SAVED)" THEN PRINT : PRINT
"PLEASE ENTER CORRECT MASTER
CODE NAME": PRINT : GOSUB 8
60: GOTO 450
1580 GOSUB 880: GOTO 450
1999 REM * ERROR HANDLING
9000 PRINT "ERROR #" PEEK (222)
" IN LINE#" PEEK (218) + PEEK
2132 DATH 187, 210, 239, 249, 251
THE REPORT OF A COUNTY OF A SECOND OF THE PARTY OF THE PA

TYPO II TABLE

Code	Line#	Code	Line#	Code	Line#
YJ	10	BZ	570	HE	1070
GG	20	BK	580	JN	1080

	CONTRACTOR OF THE PARTY OF THE		THE RESIDENCE OF THE PARTY OF T	THE RESIDENCE OF THE PARTY OF T	The second secon
		A communication	*		
TJ	30	PZ	590	TH	1090
UJ	40	FA	600	CO	1100
IO	50	QC	610	HE	1110
BU	60	IP	620	LK	1120
UG	100	QI	630	QP	1130
RR	110	UP	640	CL	1140
CH	130	EU	650	SL	1150
AY	140	TY	660	JT	1160
JY	150	OX	670	PE PE	1170
PK	160	VC	680	FA	1180
OT	170	HE	690	LB	1190
YZ	180	QZ	700	CM	1200
GZ	190	JL	710	XD	1210
CW	200	MG	720	RZ	1220
LT	210	WZ	730	WK	1230
MJ	550	PO	740	JH	1240
ZO	225	YZ	750		
				FA	1250
UQ	227	KS	760	HE	1260
MT	230	KO	770	GV	1270
VC	240	НН	780	ET	1290
FC	250	OI	790	DQ	1300
YO	260	FZ	800	DL	1310
KG	270	HE	810	AW	1320
PT	280	MK	820	HR	1330
GW	290	LI	830	AW	1340
OJ	300	XT	840	GB	1350
HU	310	DW	850	RB	1360
PC	320				
		XU	860	OC	1370
NX	330	HU	870	НВ	1380
XD	340	JX	880	GS	1390
KQ	350	YD	890	HE	1400
FD	360	NF	892	AN	1430
BB	370	MI	894	OK	1440
LR	380	PP	900	VS	1450
NP	390	FA	910	JR	1460
AK	400	SS	920	GU	1470
NZ	410	ZD	930	YN	1480
KQ	420	CD	940	JY	1490
FI	430	EU	950	HE	1500
TO	440	QC	960	AN	1510
KJ	450	HE	970	TO	1520
XS	460	IR	980	QY	1530
MX	470	ZE	990	JR	1540
FP	480	HE	1000	UН	1550
IO	490	JN	1010	FQ	1560
KO	500	QI	1020	ZM	1570
IK	520	UP	1030	SM	1580
KQ	540	EU	1040	DI	1999
JR	550	TY	1050	SP	9000
YW	560	LK	1060	3	שששב
I W	JOU	LN	THOM		

Total checksum = 7536413

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DVORAK'S KEYBOARD

Article on page 25

```
10
   REM * DUDRAK PROGRAM
20
   REM * BY FRANK HAYES
   REM * COPYRIGHT (C) 1986
40
   REM * ANTIC PUBLISHING INC.
   REM * II COMPUTING VOL.2 NO.
100
   TEXT : HOME
   PRINT "MAKE SURE THE CAPS L
   OCK KEY IS UP ... ": PRINT
   PRINT "USE 80 COLUMNS? (Y/N
   )
   GET AS: IF AS = "Y" OR AS =
130
    "u" THEN
            PRINT AS: A = 21: PRINT
    CHR$ (4): "PR#3": GOTO 160
   IF AS = "N" OR AS = "n" THEN
    PRINT AS: A = 1: PRINT
    (17): GOTO 160
   GOTO 120
150
160
    TEXT : HOME
   HTAB A: PRINT "*****
170
   HIAB A: PRINT "*
180
   ORAK KEYBOARD:
190 HTAB A: PRINT "*
200 HTAB A: PRINT "*
                          1 2 3
   4567890[]
210 HTAB A: PRINT "*
     PYFGCRL/=
    HTAB A: PRINT "*
    EUIDHINS -
230 HTAB A: PRINT "*
     JKXBMWUZ
240 HTAB A: PRINT "*
   HTAB A: PRINT "****
     PRINT
   HTAB A: PRINT "
    SC TO RETURN TO BASIC": PRINT
270
     GOSUB 1010:B$ =
                     CHR$ (8)
280
    POKE 34,12
290 A$ = "": INVERSE : PRINT " "
    ; : NORMAL
300
     IF
        PEEK (49152) < 128 THEN
    300
     GET AS
310
     IF AS > CHRS (31) THEN
                            PRINT
    B$; A$;: GOTO 290
     IF AS - BS THEN PRINT BS:"
     "; B$; B$; : GOTO 290
     IF AS = CHRS (13) THEN
                             PRINT
    B$; " "; A$; : GOTO 290
350 IF AS = CHR$ (27) THEN
                             POKE
```

```
48690,27: POKE 48691,253: TEXT
360 AS = "": GOTO 300
1000
      REM * INIT KEYBOARD
1010
      FOR A - 0 TO 143
1020
      READ B
1030
      POKE 47984 + A.B
1040
      NEXT A
1050
      POKE 48690,112
      POKE 48691,187
1052
1060
      RETURN
1070
      REM * DUDRAK DATA
1080
      DATA 32,27,253,8,141,120
1082
      DATA 187,173,0,187,40,96
1090
      DATA 0,0,0,0,128,129,130
2000
      DATA 131,132,133,134,135
2010
      DATA 136, 137, 138, 139, 140
2012
      DATA 141,142,143,144,145
2014
      DATA 146,147,148,149,150
2020
      DATA 151,152,153,154,155
2030
      DATA 156, 157, 158, 159, 160
2032
      DATA 161,223,163,164,165
2040
      DATA 166,173,168,169,170
2050
      DATA 253,247,219,246,250
2052
      DATA 176,177,178,179,180
2060
      DATA 181,182,183,184,185
2062
      DATA 211,243,215,221,214
2070
      DATA 218,192,193,216,202
2080
      DATA 197,190,213,201,196
2082
      DATA 195,200,212,206,205
      DATA 194,210,204,162,208
2090
2100
      DATA 207,217,199,203,188
2102
      DATA 209,198,186,175,220
2110
      DATA 189,222,251,224,225
2112
      DATA 248, 234, 229, 174, 245
2120
      DATA 233,228,227,232,244
2130
      DATA 238,237,226,242,236
2132
      DATA 167,240,239,249,231
2140
      DATA 235,172,241,230,187
2150
      DATA 191,252,171,254,8
```

TYPO II TABLE

Code	Line#	Code	Line#	Code	Line#
KL	10	SU	280	MZ	2012
UP	20	IV	290	RO	2014
TJ	30	IW	300	PC	2020
BD	40	QM	310	TR	2030
IO	50	NC .	320	QR	2032
BE	100	SK	330	UU	2040
GL	110	RK	340	OM	2050
TC	120	UH	350	XX	2052

JM	130	VG	360	UL	2060	US	220	YA	1070	TL	2112
EL	140	JP	1000	IO	2062	AF	230	IE	1080	DU	2120
XN	150	PM	1010	MI	2070	XG	240	SZ	1082	QM	2130
BE	160	KH	1020	PD	2080	PO	250	HQ	1090	QZ	2132
CC	170	HM	1030	IP	2082	IC	260	KW	2000	PU	2140
PE	180	KA	1040	LZ	2090	NF	270	PL	2010	TP	2150
AW	190	HB	1050	WF	2100	DATE		ALMONE			
JS	200	LQ	1052	RU	2102	Tota	l che	cksum =	1287551		
SS	210	GU	1060	MW	2110	THE PERSON NAMED IN					

TEXT APPEAL

Article on page 62

```
330 Q$ = Q$ + "-": GOTO 270
    REM * TEXT APPEAL
10
    REM * BY MICHAEL J. BIANCALA
                                           IF C$ = "!" OR C$ = "?" OR
20
                                      340
                                          C$ = ":" THEN WS = WS + 1: GOTO
    NA,
    REM * FRANK HAYES, CHARLES J
25
                                          390
    ACKSON,
                                           IF CS <
                                                    > "." THEN PF - 0:
                                      350
    REM * AND BILL MARQUARDT
30
                                           GOTO 390
    REM * COPYRIGHT (C) 1986
                                           IF PF = 1 THEN 260
40
    REM * ANTIC PUBLISHING INC.
                                     370 PF = 1:WS = WS + 1: GOTO 390
50
    REM * II COMPUTING VOL.2 NO.
60
                                      380 Q$ = Q$ + C$: GOTO 260
100 U = 1000
                                          IF Q$ = "" THEN 260
                                     390
     DIM QS(U)
110
                                     400 W - W + 1
120
     DIM QN%(U,1)
                                     410
                                           UTAB 1: HTAB 25: PRINT W
130
     DIM DC%(U)
                                      420
                                           IF FL THEN
                                                      GDSUB 1000
                                           IF FF THEN
                                     430
                                                       GOSUB 2000
140 DS = CHRS (4)
                                      440 Q$ = ""
150
     ONERR GOTO 460
160
     TEXT : HOME
                                     450
                                           GOTO 260
                                          PRINT D$; "CLOSE"
     INPUT "FILENAME TO READ? ";
170
                                      460
                                           PRINT : IF FF - 0 THEN 500
    F$
                                      470
     IF FS = "" THEN
                                      480 FG = INT ((W + WZ) / WS * 0
180
                      END
                                          .4 + .5)
     INPUT " CREATE WORD LIST?
190
                                           PRINT "FOG INDEX = "FG
    "; A$
                                      490
    IF AS = "Y" OR AS = "L" THEN
                                      500
                                           PRINT : IF FL - Ø THEN
    FL = 1
    INPUT " CALCULATE FOG INDE
                                      510
                                           PRINT : PRINT "TOTAL NUMBER
    X? "; A$
                                           OF UNIQUE WORDS: "QI
    IF AS = "Y" OR AS = "u" THEN
220
                                      520
                                           PRINT : PRINT "TOTAL NUMBER
                                           OF SENTENCES: "WS
    FF - 1
230
    PRINT DS; "OPEN "FS
                                      530
                                           PRINT : PRINT "LIST UNIQUE
240 PRINT DS; "READ "FS
                                          WORDS? (Y/N)": GET K$
250 HOME : PRINT "TOTAL NUMBER
                                           IF K$ < > "Y" OR K$ <
    OF WORDS: "
                                          y" THEN END
260 GET C$
                                      550
                                           TEXT : HOME
    IF C$ = > "a" AND C$ < =
                                           UTAB 2: HTAB 10: PRINT "PRI
270
                                     560
    "z" THEN CS - CHRS ( ASC (C
                                          NT TO:
    $) - 32): GOTO 380
                                      570
                                           UTAB 5: HTAB 15: PRINT "<1>
   IF C$ = > "A" AND C$ <
                                           SCREEN"
    "Z" THEN 380
                                     580
                                           UTAB 7: HTAB 15: PRINT "<2>
    IF CS = > "0" AND CS <
                                           PRINTER"
290
    "9" THEN 380
                                     590
                                           UTAB 9: HTAB 15: PRINT "<3>
300
    IF CS - "'" THEN 380
                                           TEXT FILE"
    IF C$ < > "-" THEN 340
310
                                     600
                                           UTAB 11: HTAB 9: PRINT "SEL
320
    GET CS: IF CS = "-" THEN 39
```

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0

continued on next page

```
ECT (1-3): ";
    GET KS: TEXT : HOME
610
620 ON VAL (K$) GOSUB 640,690,
    740
630
    TEXT : HOME : GOTO 530
    INVERSE : PRINT "FREQ"; : HTAB
640
    17: PRINT "WORD": NORMAL : PRINT
    : POKE 34,2
650 GOSUB 1200
660 PRINT : PRINT "PRESS ANY KE
    Y TO CONTINUE"
670 GET KS
     RETURN
680
690
     PRINT DS; "PR#1"
700 PRINT "FREQ"; : PRINT TAB(
    17): "WORD": PRINT
710
    GOSUB 1200
720
    PRINT DS; "PR#0"
730
    RETURN
740
    POKE 216,0: ONERR
                         GOTO 820
750
     INPUT "FILENAME TO CREATE "
    ; F$
     IF FS = "" THEN END
760
770
    PRINT DS; "OPEN "FS
780
     PRINT DS: "WRITE "FS
790
     GOSUB 1200
800
    PRINT DS; "CLOSE"
810
     RETURN
820 PRINT "CANNOT CREATE FILE
830 PRINT DS; "CLOSE": END
1000 IF QI = 0 THEN QN%(0,1) =
    1:QN%(0,0) = 1: GOTO 1100
1010 QU - QN%(0,1)
1020 IF QS(QU) = QS THEN QC%(QU
    ) = QC%(QV) + 1: RETURN
     IF QS(QU) > QS THEN 1060
1040 QU - QN%(QU,1)
1050 IF QU < > 0 THEN 1020
      IF QI - U THEN PRINT "TOO
     MANY UNIQUE WORDS": GOTO 46
1060 \text{ QN}(QI + 1,0) = \text{QN}(QU,0)
1070 QN%(QI + 1,1) - QV
1080 \ QN^*(QN^*(QV,0),1) = QI + 1
1090 QN%(QU,0) = QI + 1
1100 QI = QI + 1
1110 QS(QI) - QS
1120 QC%(QI) = 1
1130
      RETURN
1200 \, \text{QV} = \, \text{QN} \times (0,1)
1210
      PRINT QC%(QU),Q$(QU)
1220 QU = QN2(QU,1)
      IF QU THEN 1210
1230
1240
      RETURN
      REM * COUNT SYLLABLES
2000 WOS - QS:ZI - 1:ZL - LEN (
    WO$):25 - 0
2010 IF ZL < 3 THEN ZS = 1: RETURN
2020 ZC$ -
            MIDS (WOS, ZI, 1): IF
```

ZI - ZL THEN 2080 2030 IF (ZC\$ < > "A") AND (ZC\$ < > "E") AND (ZC\$ < > "I") AND (ZC\$ < > "D") AND (ZC \$ < > "U") AND (ZC\$ < > "Y ") THEN ZI - ZI + 1: GOTO 20 20 2040 ZS = ZS + 1:ZI = ZI + 1 2050 ZC\$ - MID\$ (WO\$,ZI.1): IF ZI - ZL THEN 2080 2060 IF (ZCS = "A") OR (ZCS = " E") OR (ZC\$ = "I") OR (ZC\$ = "O") OR (ZC\$ = "U") OR (ZC\$ = "Y") THEN ZI = ZI + 1: GOTO 2050 2070 GOTO 2030 2080 **GOSUB 2100** 2082 IF ZS > 2 THEN WZ = WZ + 1 2090 RETURN 2100 Z1\$ = ZC\$: Z2\$ = MID\$ (WD\$, ZL - 1,1):Z3\$ = MID\$ (WD\$,ZL - 2.1)2110 IF (Z1S = "A") OR (Z1S = I") THEN ZS = ZS + 12120 IF Z2\$ = "E" AND (Z1\$ = "S " OR Z1\$ - "D") THEN ZS - ZS IF Z1\$ = "Y" AND (Z2\$ < 2130 "A") AND (Z2\$ < > "E") AND (Z2\$ < > "O") AND (Z2\$ < "U") THEN ZS = ZS + 1 2140 IF Z15 = "D" AND (Z25 < "O") THEN ZS = ZS + 1 2150 IF Z2\$ + Z1\$ = "LE" AND (Z 3\$ < > "A") AND (Z3\$ < > " E") AND (23\$ < > "I") AND (Z3\$ < > "O") AND (Z3\$ < "U") AND (Z3\$ < > "Y") THEN ZS = ZS + 1IF 25 = 0 THEN 25 = 1 2160 2170 RETURN

TYPO II TABLE

Code	Line#	Code	Line#	Code	Line#
ZD	10	PR	440	HF	1000
MU	20	YB	450	QS	1010
XJ	25	GB	460	JU	1020
MD	30	AE	470	XD	1030
TJ	40	RR	480	JU	1040
BD	50	PQ	490	UW	1050
IO	60	ON	500	QX	1055
AU	100	QT	510	NC	1060
UN	110	AN	520	RD	1070
QN	120	CS	530	LU	1080
LE	130	RZ	540	GD	1090
RR	140	BE	550	OP	1100

RB	150		WI	560	JW	1110	PZ	310		JE	720	1 55 40	нв	i
BE	160		YQ	570	ND	1120	BU	320		GV	730		GX	13
HI	170		WL	580	GU	1130	PH	330		AX	740		FI	1
YT	180		HJ	590	QS	1200	ΧW	340		GN	750		GU	
TC	190		OY	600	IN	1210	AQ	350		YT	760		QC	1
XY	200		CO	610	JU	1220	YG	360		PE	770		QC	
EJ	210		RX	620	XX	1230	XU	370		CA	780		PD	i
UA	550		FS	630	GU	1240	UM	380		GY	790		ME	
PE	230		US	640	NX	1999	MT	390		GB	800		LJ	i
IF	240		GY	650	UK	2000	RP	400		GV	810		UM	
GP	250		QE	660	SK	2010	IP	410		JU	820		QG	li
QQ	260		RG	670	EY	2020	KL	420		SV	830		GV	
טם	270		GV	680	RF	2030	JZ	430						
OM	280		JN	690	IC	2040								
ωW	290		MO	700	EY	2050	Tota	1 che	cksu	- mL	28165	557		
KM	300		GY	710	UU	5060								
		the springer with the					The state of the s							

MULTI-COLUMN PRINTER

Article on page 63

```
10
    REM * MULTIPLE COLUMN PRINTE
    REM * BY WILLIAM U. R. SMITH
11
12
    REM * COPYRIGHT (C) 1986
13
    REM * ANTIC PUBLISHING, INC.
    REM * II COMPUTING VOL.2 NO.
14
20
    DIM 0$(100)
30
    FOR I = 1 TO 30:B$ = B$ +
                                CHR$
    (32): NEXT I:BS = BS + BS +
    FOR I = 1 TO 28:BD$ - BD$ +
40
    ".": NEXT I
50 NFS - ""
    DATA TOP MARGIN, LINES OF PRI
60
    NT PER PAGE
70
    DATA NUMBER OF COLUMNS, TEXT
    WIDTH
80
    DATA LEFT MARGIN, SPACE BETWE
    EN COLUMNS
90
    DATA FILENAME
100
     DATA 5,55,2,35,5,5
     DATA CATALOG DISK, PRINT TO
    SCREEN, PRINT TO PAPER, EXIT T
    O BASIC
120
     FOR X = 1 TO 7: READ PS(X):
     NEXT
130
     FOR X = 1 TO 6: READ A(X): NEXT
140
     FOR X = 1 TO 4: READ MS(X):
     NEXT
150
     HOME
     HTAB 11: PRINT "MULTIPLE CO
160
     LUMN PRINT"
```

```
PRINT
170
    FOR X = 1 TO 7
180
190 PS = 25: IF X = 7 THEN PS =
200
    HTAB 6: PRINT CHR$ (64 + X
    ); " - "; LEFTS (PS(X) + BDS,
    PS);
210
    IF X = 7 THEN PRINT
                            RIGHTS
    (BD$ + NF$,15): GOTO 230
220
     PRINT
           RIGHTS (BDS +
    (A(X)),5)
230
    NEXT
240
     PRINT
250
    FOR X = 1 TO 4
     HTAB 6: PRINT X;" - ";M$(X)
260
270
    NEXT
280 PRINT : PRINT
    PRINT "YOUR CHOICE - "; : GET
290
    AS: PRINT
        UAL (AS): IF X = 0 THEN
300 X -
    320
310
    ON X GOTO 1000, 2000, 3000, 15
    00
320 X = ASC (AS) - 64: IF X < 1
     OR X > 7 THEN 150
330
     PRINT
     PRINT "ENTER YOUR CHOICE FO
340
    R: "
350 PS = 25
360 AS = STRS (A(X)): IF X = 7 THEN
    A$ - NF$:PS - 15
     UTAB 21: HTAB 6: PRINT
                              LEFT$
    (P$(X) + BD$, PS); A$
380
    VTAB 21: HTAB 6 + PS: INPUT
    ""; IS
                          continued on next page
```

2070

2080

2082

2090

2100

2110

2120

2140

2150

2160

2170

390 IF IS - "" THEN 150
400 IF X = 7 THEN NFS = IS: GOTO
150 150 150 150 150 150 150 150 150 150
410 A - VAL (IS): IF A - 0 THEN
150 DE DESCRIPTION DE SEE DE
420 A(X) = A: GOTO 150
1000 REM * CATALOG DISK
1010 PRINT 987 V3 888 MUN
1020 PRINT CHR\$ (4); "CATALOG"
1030 PRINT
1030 I KINI
TO TO THE THEODY WELLOW TOWN
NU": GET AS: PRINT
1050 GOTO 150
1500 REM * EXIT TO BASIC
1510 TEXT : HOME : END
2000 REM * PRINT TO SCREEN
2010 SLOT = 3
2020 GOTO 3040
3000 REM * PRINT TO PAPER
3030 SLOT = 1
3040 FOR X = 1 TO A(2):0\$(X) =
"": NEXT
"": NEXT 3110 PN = 1:LOS = ""
3120 ONERR GOTO 4000:ER = 0
3130 IF NFS = "" OR VAL (NFS) <
> 0 THEN PRINT "IMPROPER F
ILE NAME. PRESS RETURN"; : GET
AS: PRINT : GOTO 150
3140 PRINT CHR\$ (4); "UNLOCK ";
NFS
3150 PRINT CHR\$ (4); "OPEN "; NF
\$
·
3160 PRINT CHR\$ (4); "READ "; NF
S Thomas Anna Land Land Land
3170 FOR COL = 1 TO A(3)
3177 FOR OL = 1 TO A(2)
3180 IS = LOS:CC = LEN (IS):LOS
- "":SC - 0
3190 PRINT : UTAB 20: PRINT "FO
RMATTING LINE ";OL + 1;" OF COLUMN ":COL:" ON PAGE ":PN:
"HONV "NIQUE HORDS" / SOTE AND MESS
3200 GET A\$
3202 IF AS = CHR\$ (13) THEN 33
00
2210 15 - 15 + 05
3215 CC - LEN (IS)
JEIJ LL - LEN (IB)
3220 IF AS = " " THEN SC = CC 3230 IF CC < A(4) THEN 3200
3230 IF CC < A(4) THEN 3200
3240 FE = 0 3245 IF SC = 0 THEN SC = A(6) -
3245 IF SC = 0 THEN SC = A(6) -
1.FF = 1
3250 IF CC > SC THEN LOS - RIGHTS
(IE CC - CC)
(I\$,CC - SC)
3260 IS = LEFTS (IS,SC)
DE TITLE I TITLE IN THE
Manual and a country that last last and an entire an entire and an entire an entire an entire and an entire and an entire and an entire and an
3300 IF COL = 1 THEN O\$(OL) = LEFT\$ (B\$,A(5))
(B\$,A(5))
3307 OS(OL) = OS(OL) + IS
3308 IF LEN (I\$) < A(4) THEN D
\$(OL) = O\$(OL) + LEFT\$ (B\$,
and the second of the second o

and the state of t
Declarity Philosophia
A(4) - LEN (I\$)) 3309 IF COL < A(3) THEN O\$(OL) =
Os(OL) + LEFTS (BS, A(6))
3310 NEXT OL
3320 NEXT COL ON TO THE TOTAL OF THE TOTAL O
3330 PRINT - 0 10 - 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3340 PRINT CHR\$ (4); "PR#"; SLOT
0885 PS VB - 1088 -27 055 A
3350 FOR X = 1 TO A(1): PRINT :
SOSS NEXT THE SECOND SES 3
3360 FOR X = 1 TO A(2)
3370 PRINT OS(X)
3380 NEXT PROPERTY OF THE PROP
3390 PRINT CHR\$ (12): REM FOR
M FEED FOR NEW PAGE
3400 PN = PN + 1
3410 PRINT CHR\$ (4); "PR#0"
3420 FOR X = 1 TO A(2):0\$(X) =
"": NEXT :X = FRE (Ø)
3430 IF ER - 0 THEN GOTO 3160
3440 GOTO 150
4000 REM * ERROR HANDLER 4010 POKE 216,0:E = PEEK (222)
TOTO FORE ETB, U.E - FEER (EEE)
4020 PRINT : PRINT CHR\$ (4);"C
LOSE"
4030 IF E - 6 THEN PRINT "FILE
NOT FOUND. PRESS RETURN"::
4030 IF E - 6 THEN PRINT "FILE NOT FOUND. PRESS RETURN";: GET AS: PRINT : GOTO 150
4040 IF E - 8 THEN PRINT "DISK
I/O ERROR. PRESS RETURN"::
GET AS: PRINT : GOTO 150
4050 IF E - 5 THEN ER - E: GOTO
3330
4060 PRINT "A SYSTEM ERROR HAS
OCCURED"
4065 PRINT "ERROR #"E" IN LINE
#" PEEK (218) + PEEK (219) *
256
HOZO END

TYPO II TABLE

Code	Line#	Code	Line#	Code	Line#
BU	10	HE	330	SM	3210
RW	11	WJ	340	JN	3215
TJ	12	ZJ	350	AD	3220
UJ	13	YY	360	LUU	3230
IO	14	LO	370	NK	3240
PP	20	QB	380	KZ	3245
XD	30	LM	390	IP	3250
HS	40	DP	400	CX	3260
GY	50	NW	410	PW	3270
IP	60	UY	420	RU	3300
KD	70	UL	1000	ZU	3307
TS	80	HE	1010	RG	3308
WX	90	RO	1020	GO	3309
TJ	100	HE	1030	TW	3310
				-	

DI	110	RE	1040	EZ	3320	FA	230	IP	3130	ΧW	3440
MB	120	XW	1050	HE	3330	HE	240	JJ	3140	YJ	4000
FB	130	EJ	1500	RZ	3340	OK	250	QX	3150	RU	4010
KI	140	IS	1510	QF	3350	OF	260	IG	3160	JY	4020
FU	150	QD	2000	FT	3360	FA	270	XA	3170	XK	4030
SC	160	EW	2010	XY	3370	HC	280	MR	3177	RA	4040
HE	170	нн	2020	FA	3380	KU	290	JB	3180	QO	4050
PC	180	QD	3000	AD	3390	UK	300	UE	3190	LL	4060
TU	190	EK	3030	PT	3400	WM	310	QM	3200	DU	4065
SX	200	RH	3040	OR	3410	BD	320	CX	3202	EY	4070
LU	210	TD	3110	ZE	3420						
TA	220	KT	3120	TR	3430	Tota	1 chec	ksum =	2168706		

INCOME TAX SPREADSHEET

Article on page 69

TYPE-IN INSTRUCTIONS:

To use this template without modification, you'll need AppleWorks and the listing that begins on this page. To begin, run AppleWorks and create a new spreadsheet with the name TAX1040.

Now look at the listing. Each listing line begins with a cell name, followed by what should be typed into the cell. For example, the first line is

A1: "1986 Income Tax Calculator Form 1040

This is the line for cell A1. To type this line into the spreadsheet, use the arrow keys to highlight cell A1, then type exactly what you see following the colon, beginning with the quote marks. (The quote marks won't show up onscreen; they simply tell AppleWorks that you're typing a label, rather than a value or formula.)

After you've typed in the contents of the line, press RETURN. Then proceed to the next line.

Once you've typed in a significant part of the template,

you'll notice there's a delay after you press RETURN and before you can move to the next cell. That's because AppleWorks is automatically recalculating the entire spreadsheet after you type in each cell. You can turn off that automatic recalculation by typing the following sequence of keys: Open Apple-V, followed by R, followed by F, followed by M. And don't forget to regularly save your work with Open Apple-S.

If you'd like to use this template with a spreadsheet program other than AppleWorks, be sure to check the formulas carefully. Not all spreadsheets work exactly the same, so double-check each formula to make certain it functions the same way with your spreadsheet and Apple-Works.

Please remember that though we hope this template will be helpful, *II Computing* and Antic Publishing, Inc., cannot be responsible for any mistakes that might be made in your tax payments as a result of using this template.

Good luck and type carefully!//

```
A1: "1986 Income Tax Calculator Form 1040
A2: "Recalculate this sheet 5 times!
A4: "Filing status
A5: "1 Single
A6: "2 Married--joint
A7: "3 Married--separate
A8: "4
       Head/household
A9: "5 Widow(er)
A10: "
         (Select one)
F10: 0
A12: "6f Total exemptions:
G12: 1
A14: "7 Wages, etc.
G14: 0
A15: "8
        Interest (Sched B)
G15: +G144
A16: "9a Dividends
C16: +G153
D16: " 9b
           Exclusion
F16: 0
A17: " c
G17: +C16-F16
```

```
A18: "10 Tax refunds
A19: "11 Alimony received
G19: 0
A20: "12 Business (Sched C)
620: 0
A21: "13 Capital gain (Sched D)
G21: 0
A22: "14 40% Cap Gain
G22: 0
A23: "15 Supplemental gains
G23: 0
A24: "16 Fully taxable pension
G24: 0
A25: "17a
          Other pension received
F25: 0
A26: "
          Other pension, taxable
A27: "18 Rents, etc. (Sched E)
A28: "19 Farm (Sched F)
```

continued on next page

```
A29: "20a
                                                         A79: "59 Form 4868 payment
            Unemployment comp received
F29: 0
                                                         F79: 0
      ь
A30:
            Unemployment comp, taxable
                                                         A80: "60 Excess FICA
G30: 0
                                                         F80: 0
A31: "21a
           Soc. sec. received
                                                         A81: "61 Fuel tax credit (Form 4136)
F31 . 0
                                                         F81: 0
A32: " h
          Soc. sec., taxable
                                                         A82: "62 Reg. invest. co. credit (Form 2439)
G32. 0
                                                         F82: 0
A33: "22 Other income
                                                         A83: "63 Total payments
G33: 0
                                                         G83: @SUM(F76...F82)
A34: "23 Total income
                                                         A85: "64 Amount overpaid
G34: @SUM(G14...G33)
                                                         G85: @IF(G83>G74,G83-G74,O)
A36: "24 Moving expenses
                                                         A86: "67 Amount owed
F36: 0
                                                         G86: @IF(G74>G83,G74-G83,0)
A37: "25 Employee bus. (Form 2106)
                                                         A89: "Schedule A--Itemized Deductions
F37: 0
                                                         A91: "
                                                                  Medical
A38: "26 IRA deduction
                                                         A92: "1 Prescriptions
F38: 0
                                                         F92: 0
                                                         A93: "2a Doctors, etc.
A39: "27 Keogh
F39: 0
                                                         F93: 0
A40: "28 Withdrawal penalty
                                                         A94: " b Transportation
                                                         F94: 0
A95: " c Other
F40: 0
A41: "29 Alimony paid
F41: 0
                                                         F95: 0
A96: "3 Total
A42: "30 Sched W couple deduction
                                                         F96: @SUM(F92...F95)
F42: +G230
A43: "31 Total income adjustments
                                                         A97: "4 Less 5% of income
643: @SUM(F36...F42)
                                                         F97: +G45*.05
                                                         A98: "5 Deduction
A45: "32 Adj. gross income
G45: +G34-G43
                                                         G98: @IF(F96>F97,F96-F97,0)
                                                                  Taxes
A47: "33 Adj. gross income
                                                         A99: "
                                                         A100: "6 Income
G47: +G45
A48: "34a
                                                         F100: 0
            Itemized ded. (Sched A)
                                                         A101: "7 Real estate
G48: +G134
A49: " b
                                                         F101: 0
           Contrib. -- cash
F49: 0
                                                         A102: "8a General sales
A50: " c
           Contrib. -- non-cash
                                                         F102: 0
F50: 0
                                                         A103: " b Motor vehicle sales
A51: " d
                                                         F103: 0
           Total
                                                         A104: "9 Other
G51: +F49+F50
A52: "35 Net income
                                                         F104: 0
                                                         A105: "10 Deduction
G52: @IF(G51>G48,G47-G51,G47-G48)
A53: "36 Exemption value
                                                         G105: @SUM(F100...F104)
                                                         A106: "
G53: +1080*G12
                                                                   Interest
                                                         A107: "11a Mortgage--bank
A54: "37 Net taxable income
G54: @IF(G52>G53,G52-G53,O)
                                                         F107: 0
                                                         A108: " b Mortgage--indiv.
A55: "38 ENTER TAX HERE from table/schedules
                                                         F108: 0
G55: +G187
A56: "39 Additional taxes
                                                         A109: "12 Credit cards
                                                         F109: 0
G56: 0
                                                         A110: "13 Other
A57: "40 Total tax
                                                         F110: 0
G57: +G55+G56
                                                         A111: "14 Deduction
A59: "41 Care credit (Form 2441)
                                                         G111: @SUM(F107...F110)
F59: +G215
                                                         A112: " Contributions
A60: "42 Elderly credit (Sched R)
                                                         A113: "15a Cash--small
F60: 0
A61: "43 Political contrib. credit
                                                         F113: 0
F61: 0
A62; "44 Total misc. credit
                                                         A114: " b Cash--large
                                                         F114: 0
G62: @SUM(F59...F61)
                                                         A115: "16 Non-cash
A63: "45 Net tax +- credit
                                                         F115: 0
G63: +G57-G62
                                                         A116: "17 Carryover
A64: "46 Foreign tax credit (Form 1116)
                                                         F116: 0
F64: 0
                                                         A117: "18 Deduction
A65: "47 Business credit
                                                         G117: @SUM(F113...F116)
F65: 0
                                                         A119: "19 Casualty loss
A66: "48 Total bus. credit
                                                         G119: 0
G66: +F64+F65
                                                         A120: "
A67: "49 Net tax + credit
                                                         A121: "20 Dues
G67: +G63-G66
                                                         F121: 0
A69: "50 Self employment (Sched SE)
                                                         A122: "21 Tax prep
G69: 0
                                                         F122: 0
A70: "51 Alt. min. tax (Form 6251)
                                                         A123: "22 Other
G70: 0
                                                         F123: 0
A71: "52 Recap. invest. cred. tax (Form 4255)
                                                         A124: "23 Deduction
                                                         G124: @SUM(F121...F123)
A126: "24 Sum of deductions
G71: 0
A72: "53 Tip inc. SS tax (Form 4137)
G72: 0
                                                         G126: @SUM (G98...G124)
A73: "54 Tax on IRA (Form 5329)
                                                         A127: "25 Status deduction
G73: 0
                                                         C128: "Status 1:
A74: "55 Total tax
                                                         D128: @IF(F10=1,2480,0)
G74: @SUM(G67...G73)
                                                         C129: "Status 2:
                                                         D129: @IF(F10=2,3670,0)
C130: "Status 3:
A76: "56 Withheld
F76: 0
                                                         D130: @IF(F10=3,1835,0)
C131: "Status 4:
A77: "57 1986 est. payments
F77: 0
                                                         D131: @IF(F10=4,2480,0)
C132: "Status 5:
A78: "58 Earned income credit
F78: 0
```

```
D132: @IF(F10=5,3670,0)
G133: @SUM(D128...D132)
A134: "26 Total deductions
G134: @IF(G126>G133,G126-G133,0)
A137: "Schedule B--Interest/Dividend Income
A139: "
          Interest
A140: "1
          Seller-financed mortgages
G140: 0
A141: "2 Other interest
G141: 0
G142: 0
G143: 0
A144: "3 Total interest
G144: @SUM(G140...G143)
A146: "4 Dividends
G146: 0
G147: 0
G148: 0
A149: "5 Total
G149: @SUM(G146...G148)
A150: "6 Cap. gain dist.
F150: 0
A151: "7
         Nontaxable dist.
F151: 0
A152: "8 Total dist.
G152: +F150+F151
A153: "9 Total dividends
G153: +G149-G152
A156: "Schedule G--Income Averaging
A158: "1 1983 Form 1040 line 37
G158: 0
A159: "2 1984 Form 1040 line 37
G159: 0
A160: "3 1985 Form 1040 line 37
G160: 0
A161: "4 Outside US income 1983-5
G161: 0
A162: "5 Total
G162: @SUM(G158...G161)
A164: "6 Divide by 3
G164: @INT(G162/3)
A165: "7 Multiply
         Multiply by 140%
G165: +G164*1.4
A166: "8 1986 income (Form 1040 line 37)
G166: +G54
A167: "9 Premature distrib.
G167: 0
A168: "10 Net of distrib.
G168: +G166-G167
A169: "11 Community state
G169: 0
A170: "12 Net of lines 11 & 10
G170: @IF(G168>G169,G168-G169,0)
A171: "13 Line 7
G171: +G165
A172: "14 Averageable income
G172: +G170-G171
A174: "15 25% of averageable income
G174: +G172*.25
A175: "16 Line 7
G175: +G165
A176: "17 Total of lines 15 & 16
G176: +G174+G175
A177: "18 Line 11
G177: +G169
A178: "19 Total of lines 17 & 18
G178: +G176+G177
A179: "20 Tax on line 19 (from Tax Schedule)
G179: 0
A180: "21 Tax on line 17 (from Tax Schedule)
F180: 0
A181: "22 Tax on line 16 (from Tax Schedule)
F181: 0
A182: "23 Net of lines 21 & 22
F182: +F180-F181
A183: "24 300% of line 23
G183: +F182*3
```

```
A184: "25 Tax on line 8 (from Tax Schedule)
F184: 0
A185: "26 Tax on line 10 (from Tax Schedule)
F185: 0
A186: "27 Net of lines 25 & 26
G186: +F184-F185
A187: "28 Total Sched G tax
G187: @SUM(G179...G186)
A190: "Form 2441--Child Care Credit
A192: "1 Qualifying persons
G192: 0
A193: "2 Qualified expenses
G193: 0
A194: "3a Own earned income
G194: 0
A195: " b Spouse's earned income
G195: 0
6196: " c If filing jointly, smaller earned income G196: @MIN(G194,G195)
A197: "4 Expense base
G197: @IF(G195=0.@MIN(G193.G194).@MIN(G193.G196))
R199: "
          Percentage table:
B200: 0
C200: .3
B201: 10001
C201: .29
B202: 12001
C202: .28
B203: 14001
C203: .27
B204: 16001
C204: .26
B205: 18001
C205: .25
B206: 20001
C206: .24
B207: 22001
C207: .23
B208: 24001
C208: .22
B209: 26001
C209: .21
B210: 28001
C210: .2
A212: "5
          Deductible percent
G212: @LOOKUP(G197,B200...B210)
A213: "6 Deductible amount
G213: +G197*G212
A214: "7 1985 exp. paid in '86 at '85 percentage
G214: 0
A215: "8 Total credit
G215: +G213+G214
A218: "Schedule W--Married Couples
F220: "You
G220: "Spouse
          Wages, etc. (Form 1040, line 7)
A221: "1
F221: 0
G221: 0
A222: "2 Profit (Sched C, F, K-1)
F222: 0
G222: 0
A223: "3
          Total earned income
F223: +F221+F222
G223: +G221+G222
A225: "4 Adjustments (Form 1040,
B226: "lines 25, 26, 27, 31)
F226: 0
G226: 0
A227: "5 Net qualified income
F227: +F223-F226
G227: +G223-G226
A228: "6 Smaller from line 5
G228: @MIN(F227,G227)
A229: "7 Percentage
G229: " 10%
A230: "8 Total deduction
G230: +G228*.1
```

FEBRUARY / MARCH 1987 57

THIS ISSUE'S SOFTSTRIP: INCOME TAX SPREADSHEET

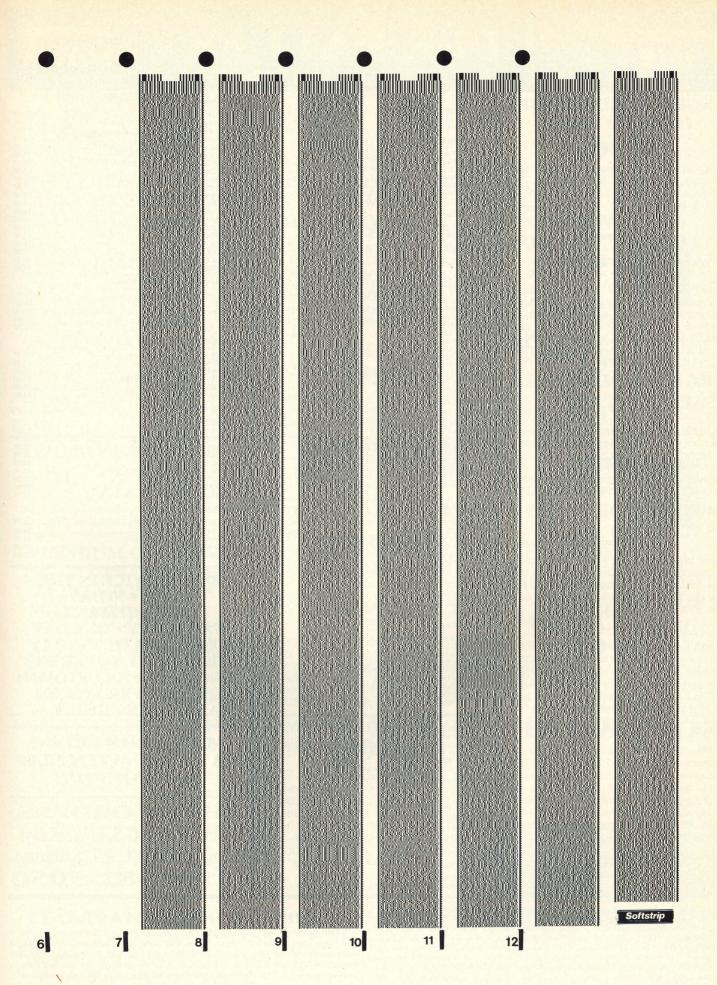
These Cauzin Softstrips contain an expanded version of the Income Tax Spreadsheet template from this issue's Software Library. You can read the Softstrips directly into your Apple II computer with a Cauzin Softstrip Reader, available from many computer stores for \$199. Or see the ad on page 27 of this issue for a special Softstrip Reader offer. The Softstrip Reader can also read the strips in books and other magazines, and with special software you can also print your own Softstrips.

If you don't own a Softstrip Reader, call Cauzin Systems at 1-800-533-7323 (in Connecticut, (203) 573-0150) for the address of the nearest Cauzin dealer with an Apple and a Softstrip Reader. Then bring this issue of *Il Computing* and a formatted ProDOS disk to the dealer for a demonstration. The dealer will transfer the files from Softstrip to disk free of charge, and you'll see how easy getting software out of a magazine can be!

TAX 1040

1

2





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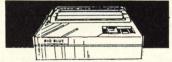
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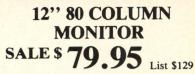
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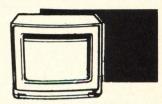
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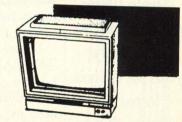


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UTILITIES

Text Appeal

by MICHAEL J. BIANCALANA, FRANK HAYES, CHARLES JACKSON and BILL MARQUARDT, *II Computing* staff

our
Apple II can
even calculate
how easy
your writing is
to read.

Good writing means more than just a good word processor. Some programs will help check your spelling and even your grammar, but to get the most out of your Apple II, you should be able to use your computer to analyze what you've written: to count the words, examine how they're used, and even calculate how easy your writing is to read.

Sound complicated? It's not if you've got TEXT.APPEAL from this month's Software Library. Just type in the program from page 51 and check it with TYPO.II, or select it from the Action Disk menu. When you run it, it will ask three things: the name of your text file, whether you want to know the Fog Index of the text and whether you want a word list. Then it goes to work—reading in the text, calculating, analyzing and alphabetizing words.

GETTING APPEAL

There's only one restriction: TEXT.APPEAL only uses ASCII text files. That way, you can use the program whether you use AppleWorks, Apple Writer or most other word processors. For example, to create a text file from your AppleWorks document, just use Open-Apple-P; when the program asks "Where do you want to print the file?" select "2. A text (ASCII) file on disk."

Once your document is a text file, TEXT.APPEAL will let you do any of three things. First, it counts the number of words. If a word is hyphenated it's counted as a single word, but words separated by any other punctuation are counted separately. If you just want a word count, answer *No* to the questions on the screen.

But TEXT.APPEAL can also make an

alphabetical list of all the words in the text, with a count of how many times each word appears. You can see this list on the screen, print it on your printer, or store it in a separate disk file. TEXT.APPEAL can handle up to 1,000 different words—or even more if you change the variable in line 100.

Because alphabetizing 1,000 words takes time, using the word list option really slows down the program. You'll probably want to choose this option only for short files; if you use it with a larger file, be prepared for a long wait.

Finally, TEXT.APPEAL can calculate the Fog Index of your text. What's the Fog Index? It's an estimate of how many years of schooling someone needs to read the writing easily—the "grade level" of the text. The Fog Index was developed by Robert Gunning in 1968, and the formula for calculating it is straightforward: you simply count the total number of words, add the number of words with three or more syllables, divide the sum by the number of sentences, and then multiply the result by 0.4. That's a lot of work to do by hand, but your Apple II can do it—and probably faster than you can, too.

APPLE POLISHING

How can you use TEXT.APPEAL to polish your writing?

If you're supposed to be writing a 100-word essay or a 6,000-word short story, TEXT.APPEAL can easily let you know exactly how many words you've got.

The Fog Index will let you know how easy your writing is to read. In general, the lower the Fog Index, the better. Most daily newspapers try to keep their writing clear enough so that

continued on page 74

Multi-Column Printer

by WILLIAM V. R. SMITH

First there was word processing. Then there was desktop publishing. And now there's MULTI.PRINT, *II Computing*'s multiple-column printing utility. Use it to make authentic-looking newsletters and add spice to memos, articles and correspondence. You're no longer limited to mundane, single-column printouts.

All you have to do is type it in from the Software Library on page 53 and check it with TYPO.II, or select it from the Action Disk menu. Run the program, type in the name of the text file you want to print, and—presto—you'll have a multiple-column printout.

THE COLUMN PROBLEM

It's not easy to print out text in multiple columns using most word processors—they're only designed to create one-column pages. To get around that problem, MULTI.PRINT works on ASCII text files. Most word processors will let you convert your document into an ASCII text file; with AppleWorks, for example, you use the Open-Apple-P command and "print" the document to a text file.

Once your document is a text file, it's simple to use MULTI.PRINT. The program comes up with a menu of choices. If you just want a simple two-column format, just press G, type in the name of your file and press RETURN. Now you can press 2 to print your file to the screen or 3 to print it on your printer. You can see a disk catalog by pressing 1, or return to BASIC by pressing 4.

There are six different values you can adjust to change the way MULTI.PRINT prints out your document. You can specify the top margin and the lines of print per page. You can also choose the number of columns, how many characters wide each column will be, the space between columns and the left margin for the page.

The program doesn't make assumptions about the kind of paper or printer you're using. Some printers can handle very wide pages or have other special features; just remember that it's up to you to keep your printout on the page.

Ordinarily the program will print each column in *unjustified* form—with the left edge even and the right edge ragged. If a word is so long that it won't fit in the column width, the program breaks the word at the end of the column and adds a hyphen. You may want to watch out for those hyphens, though—the program breaks the words at the end of the line, not necessarily in the place you want the word to break!

Words that are centered in your original document probably won't appear properly centered in the multi-column printout. Experiment with titles and special formatting features; remember, it's easy to see how your title will look if you print it on the screen.

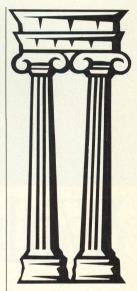
HOW DOES IT WORK?

It's really very simple. Let's look at an example to see how it operates.

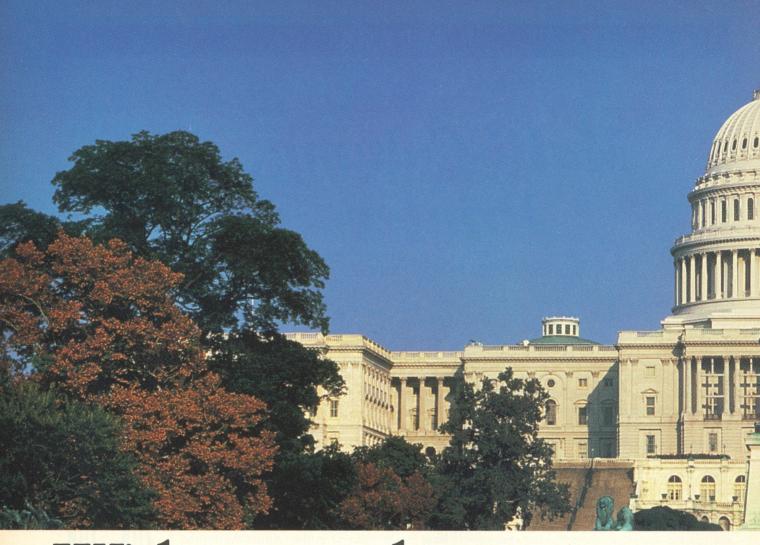
Suppose we want a two-column document with 50 lines per page and 30 characters per column. The program must first construct the 50 lines of text for the first column; then, before printing anything, it must construct the 50 lines for the second column. Only then can it print the page and go on to the next page.

The program first reads in the text file, one character at a time. It keeps track of how many

continued on page 74



Bill Smith is president of Artsci, a software company specializing in business products for the Apple II, and a former contributor to Softalk.



With enough votes, even

How would you like to see one of your students in Congress next year?

Or, for that matter, yourself?

It could very well happen, if you enter the Apple Computer Clubs International Merit Competition '87.

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An Apple Computer Club provides a fun,

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And once a year, to recognize those who develop particularly innovative applications for Apple computers, we hold the Merit Competition.

Club members can

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There are separate divisions in each category for elementary, middle and secondary school students. So everyone is judged against his or her peers.

To give you some idea of how keen your competition will be, here are two examples of projects that won in '86:

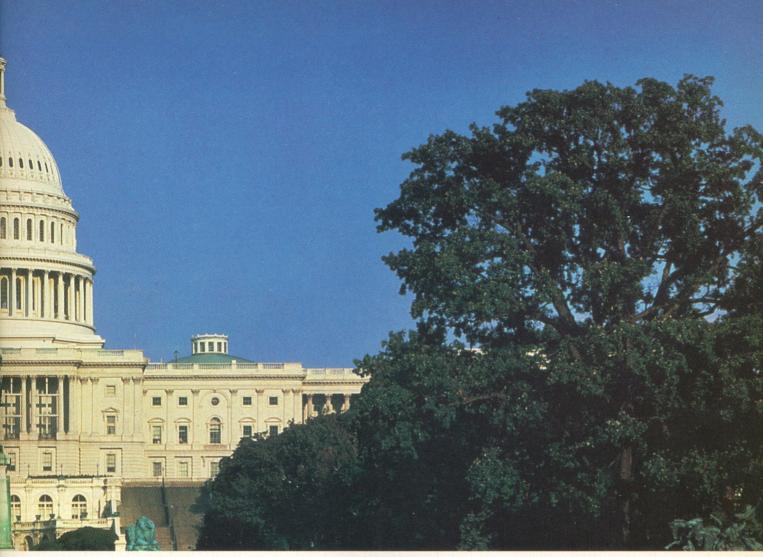
Jeanne Krapauskus, a high-school art teacher from Tinley Park, Illinois, integrated an Apple computer into

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Computer Club News, the

official club newsletter, also sponsors contests throughout the year.

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a kid could wind up here.

her curriculum, enabling her students to create high-tech art.





And in the BASIC Programming category, Jennifer Sartory and Elisabeth Dodds, fifth-graders from Wellesley, Massachusetts, created "Mazes for Masterminds," a computer game for kids ages seven to eleven.

In '87, roughly 70 students and teachers will be selected as semifinalists. We'll announce the winner and runner-up in each category in early May and honor the first-

> prize winners in Washington, D.C.

If you'd like to be one of them, give us a call at (800) 343-1425. If you're already an Apple Computer Club

advisor, we'll give you the details on how to enter Competition '87. And if you don't have a club at your school, we'll tell you how to start one.

The deadline for entries is April 15. So call soon.

With Apple's Merit Competition, there's no telling how far you and vour students might go.





ADVANCED COMPUTER CONCEPTS

Beautiful Repetition

Fractals on Your Apple II

by DANIEL WOLF, Ph.D.

Many readers of this column are surely familiar with pictures of the *Mandelbrot set*. This irresistibly beautiful object has graced the covers of several scientific and computer publications. It's a favorite at any occasion to demonstrate high-quality computer graphics, and computer shows sport an increasing number of color displays happily generating gorgeous Mandelbrot images to wow potential customers.

The Mandelbrot set is a mathematical object discovered by Benoit Mandelbrot, a mathematician working with IBM and father of the modern field of fractals. Many beautiful images of fractals can be produced by deceptively simple programs, and you can easily experiment with them using your Apple II.

WHAT'S A FRACTAL, ANYWAY?

A *fractal* is a geometric object with a fractional number of dimensions. As with many mathematical concepts, a little imagination helps in understanding the idea of a fractional dimension. We're used to the one-dimensional lines, two-dimensional surfaces and three-dimensional solids we studied in geometry. No one mentioned anything about objects with 1.3 dimensions in my high school geometry class! But in the geometric world of fractals, they're perfectly normal.

Suppose you're measuring the length of the coastline of a small island. If you just ride around the island in a motorboat and keep track of how far you travel, you might discover that the island's coastline is 20 miles long. But if you measure with a yardstick, you'll find that the island's coast seems to have infinitely many nooks and crannies; measuring them all makes the coastline much longer.

It turns out that the shorter your measuring



Daniel Wolf is a scientist who likes to use microcomputers to explore mathematics and scientific concepts. A musician as well, Dr. Wolf has an academic background in biology, physics and math.

stick is, the longer will be the resulting measurement of the coastline. When a long measuring device is used, smaller details don't contribute to the measurement. With a smaller one, the nooks and crannies can contribute to the total length measurement. As we switch to smaller and smaller measuring sticks, the total length will level off and grow very slowly—but it will still increase. That's very different than when you measure an ordinary straight line; that length is not affected if the measuring stick is somewhat shorter than the line.

Because the coastline isn't a straight line, it occupies part of a two-dimensional area. No matter how much you magnify the coastline, it still looks rough. If you really twist and turn a single line, it can indeed appear to fill up an area. That kind of line is a fractal.

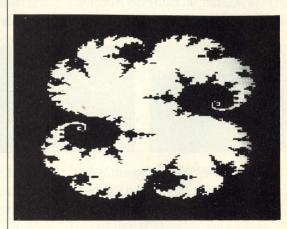


Figure 1a shows one kind of single-line fractal known as the *Hilbert curve*. It looks like a solid flat design, but it's actually one single thread from beginning to end with hundreds of corners and turns. It's based on the repetition of a single simple line design—the square wave in Fig-

ADVANCED COMPUTER CONCEPTS

ure 1b. If every segment of the square wave is replaced with a miniature version of the same square wave, the result is the Hilbert curve. We can then take each segment of that line and do the miniature square wave replacement again and again as many times as we like. A practical limit is reached when we can no longer draw or display lines fine enough to see the results.

You'll find the program HILBERT, which generates the Hilbert curve, in this month's Software Library on page 41; you can type it in and

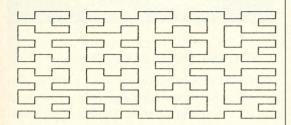


Figure 1A

check it with TYPO II, or select it from the Action Disk menu. HILBERT uses a recursion technique to repeat the square wave pattern over and over again on finer and finer length scales. As you can see, the repetition of a simple process can produce beautiful results.

ADDING COMPLEXITY

Making images of the Mandelbrot set requires an entirely different method. Repetition again is the key: this time we'll repeat the calculation of an equation. The equation for Mandelbrot sets is X=X*X+X. A similar type of fractal called the *Julia curve* uses the equation X=X*X+C (C is a constant). Generating either of these curves is a straightforward process. For each possible value of X, the equation is performed over and over; if the result never exceeds a preset limit, it's part of the curve.

It sounds simple, but there's a catch: the number X in these equations is a *complex* number, not an ordinary number. That means we'll use a slightly different method to add, multiply and measure X than we would use for ordinary numbers.

A complex number consists of two parts—it's really a pair of numbers. The first number in the pair is called the *real* part, and the second is called its *imaginary* part. Each part is just an ordinary number, like 1.21 or 3000; to keep track of which part is which, if 1.21 is the real part and 3000 is the imaginary part, we'd write the number (1.21, 3000).

When two complex numbers are added, the

sum is easy to compute: (a, b)+(c, d)=(a+c, b+d). You just add the two parts of each pair separately to get the result. For example, (54, 222)+(1.21, 3000)=(54+1.21, 222+3000), or (55.21, 3222).

Multiplication is where things really get complex: (a, b)*(c, d)=(a*c-b*d, a*d+b*c). Thus, (54, 222)*(1.21, 3000)=(54*1.21-222*3000, 54*3000+222*1.21), or (-665934.66, 162268.62). Explaining exactly *why* this is so complicated would require an introduction to the theory of

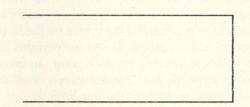


Figure 1B

complex numbers; fortunately, we can use the formula without that. In the equation we're working with, we only need to square the complex number, like this: (a, b)*(a, b)=(a*a-b*b, 2*a*b). For example, (54, 222)*(54, 222)=(46368, 23976).

Now that we know how to add and multiply complex numbers, we can use the equations for the Mandelbrot and Julia curves — but we still need a way of checking whether they exceed a preset limit. We can't measure a complex number the way we would an ordinary number; after all, it has two parts! Instead, we'll treat the complex number as a point on a graph, with the real part along the x-axis and the imaginary part along the y-axis. Then the complex number's size is its distance from (0, 0). We can calculate that distance using Pythagoras's formula: the distance of (a, b) from (0, 0) is the square root of $(a^2 + b^2)$. In figure 2 you'll notice the simple geometry of the complex number (3, 2).

To simplify the process further, we can start out by squaring our preset limit. That way, all we have to do is compare $(a^2 + b^2)$ with the preset limit—which eliminates the need to find a square root.

DESPERATELY GENERATING JULIA

The program JULIA in this month's Software Library puts it all together; it will generate different Julia sets for different constants, and display the results on your Apple II's screen in

continued on next page

fractal is a geometric object with a fractional number of dimensions.

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ADVANCED COMPUTER CONCEPTS

complex number consists of a real part and an imaginary part.

hi-res graphics. Type in the program from page 41 and check it with TYPO II, or select it from the Action Disk menu. When you run the program, it asks for a complex number to use as a constant; you must input both parts. Some examples are included in the REM statements.

The program generates a Julia curve by feeding different values of X into the Julia curve equation, and counting how many repetitions are required to reach the limit for each value. Some starting values can be churned through the equation forever and never exceed the limit, so we'll keep the number of repetitions within reason—say, 100. Each of the starting values we use will be represented by a point on the hi-res display of your Apple II. As we perform the repeating calculation for each point, an image will emerge on your Apple's screen of all the points that never reached our limit.

Mandelbrot and others can provide the mathematical proof, but take my word for it that the boundary of this image is a fractal. If you could magnify a portion of the edge, it would still look rough. You can see this effect by changing the maximum number of repetitions from 100 to 20 (the edge will be less rough) or from 100 to 250 (the edge will be even rougher).

I've deliberately kept the program very simple to make the process clear. It's possible to experiment with it in several areas. For example, Mandelbrot and others can provide the mathematical proof, but you can see for yourself that the boundary of this image is a fractal by magnifying it; just "narrow" the XWIDTH and YWIDTH variables to see a smaller part of the whole Julia set. Smaller and smaller sections of the sets still have great detail. There will be a limit to magnification, because Applesoft BASIC has limited accuracy in its floating-point arithmetic, but you should be able to divide the width variables by up to 64 or more without any problem.

You can also change the maximum number of repetitions; fewer repetitions smooth out the edge, while more repetitions make the edge rougher. If you want to experiment with coloring, it's possible to assign colors to each of the points according to how many repetitions are done for that point before it reaches the limit. Those points that make it through all 100 repetitions without reaching the limit can be colored black, representing the actual Julia set points.



ENDLESS POSSIBILITIES

Benoit Mandelbrot has written two books and several articles about fractal geometry. His works have been the inspiration for the clever computer graphic artists who have extended it. A new book, *The Beauty of Fractals* by H.O. Peitgen and P.H. Richter, has dozens of illustrations as well as articles by Mandelbrot and others on the latest developments in the field. There's a "do it yourself" section at the end of the book for those who wish to do some programming on their own. The illustrations from this book were used in the August 1985 *Scientific American* article on Mandelbrot sets that ignited a great deal of interest in the subject.

If you create a particularly interesting fractal graphics program for the Apple II—in lo-res, hi-res or double hi-res graphics, or even for the new super hi-res graphics on the Apple IIGS—send it to us. We'll publish the best of them in a future issue.

Mandelbrot and others are studying the mathematics of fractals and their relationship to problems in physics. They have pointed out analogies between fractals and many natural phenomena, such as the shapes of clouds and islands and even the repetitive branching of tree limbs and bronchial tubes in the lungs. We are the beneficiaries of the beauty of their work. Happy repetitions!//

IF YOU'D LIKE MORE ARTICLES LIKE THIS ONE, CIRCLE 238 ON OUR READER SERVICE CARD.

Income Tax Spreadsheet

by TOM CHANDLER

Now you can use your Apple II to help with your 1986 federal tax return. Just use AppleWorks and the type-in template in this issue-or the more complete version on this issue's Action Disk!

Like some help with your taxes? The type-in AppleWorks template in this issue of *II Computing* can help you with the following forms:

1986 IRS 1040 Long Form Schedule A (Itemized Expenses) Schedule B (Interest & Dividends) Schedule G (Income Averaging) Form 2441 (Child Care Deduction) Schedule W (Working Couples)

If you have a Cauzin Softstrip reader or this issue's Action Disk, an expanded version of the template also includes these forms:

Schedule C (Business Income & Expense)
Schedule D (Capital Gains)
Schedule E (Rents & Royalties)
Schedule SE (Self-Employment)
Form 2106 (Employee Business Expenses)

(If you'd like the expanded version but you aren't an Action Disk subscriber, just turn to page 38 to order this month's Action Disk separately.)

WHAT YOU NEED

To use this template, you'll need Apple-Works and your official Internal Revenue Service 1986 tax instructions and forms. If you don't have Apple-Works but you've got some other spreadsheet program, you may be able to use the template anyway. Watch the

formulas closely, though—they're specifically designed for AppleWorks, and may not function in exactly the same way on other spreadsheets.

It's also helpful to have a printer, since it's easier to copy the figures from a printout than from the screen. And if you've never used AppleWorks before, begin by studying the manual. It may take a little time to learn the ins and outs of using the AppleWorks spreadsheet, so don't wait until April 14th!

TAX SPREADSHEETS

Spreadsheet programs are ideal for preparing tax returns. You provide the personal data, then customized formulas tell the program how to crunch the numbers.

Each data element or formula is entered in a spreadsheet cell with an address—similar to the lines and columns on the tax form. As your data changes (you find another stack of receipts, for example), go to the proper cell, type in that single piece of data, and your entire tax return will be recalculated.

II Computing's 1986 tax template can be used for many different taxpayers—just save the original version on disk. It should only take about an hour to enter each individual's personal information, and you can save each tax template on disk under a different name.

The template is quite long, and you

don't have to type in any sections you won't be using. If you type in sections you later decide not to use, just don't enter any taxpayer data into those sections and they won't become part of the overall calculations.

TYPING IT IN

With the Action Disk, it's easy to use the template—just run AppleWorks and load the spreadsheet file named TAX1040. For the Softstrip, follow the directions to convert the Softstrip to an AppleWorks spreadsheet file, then run AppleWorks.

The type-in version of TAX1040 is in the Software Library beginning on page 55. Read the directions before you begin typing. Be careful not to leave out any cells, and be sure to save your work regularly. Once you've typed in the entire template and checked your work, save it using the Open Apple-S command, and you'll be ready to work on your taxes.

Before doing anything else, change the name of the spreadsheet with Open Apple-N. That way, you can do returns for many different taxpayers, starting each one with the blank TAX1040 template but saving each return under a different name.

As you fill in the spreadsheet, you'll need the 1986 IRS tax instructions and forms close at hand. The spreadsheet doesn't duplicate the tax forms exactly, and abbreviations are used wherever

continued on next page

possible. But the template follows the IRS line numbers, so you won't get lost.

As you enter information into the spreadsheet, it will automatically recalculate the values. You can turn the automatic recalc off by typing Open Apple-V, then R, then F, then M. This will save time while you're entering data. To turn recalc back on, type Open Apple-V, then R, then F, then A.

To manually recalculate the spreadsheet, use Open Apple-K. Because all the forms are interrelated, you should recalculate at least five times in a row to get correct values. Don't trust any numbers you get from the spreadsheet until you've recalculated five times!

Once you've entered information into the spreadsheet, it can calculate every line except the actual tax you owe. Putting all the tax tables into the template would chew up lots of memory and typing time. Instead, figure out

appleWorks is ideal for preparing a tax return. You just type in the formulas, and the program does the work.

your Net Taxable Income on the template, then just look up the matching Tax Table amount in your instruction booklet from the IRS as you fill out your actual 1040 paper form.

Please examine your template results with great care. If you have any doubt

about the accuracy of the template findings, get advice from a registered tax preparer. Data entry mistakes and programming errors have been known to occur. II Computing cannot be responsible for any mistakes that might be made in your tax payments as a result of using this template.

Here's hoping this year's refund is the biggest ever-and don't forget to deduct a portion of the cost of your Apple II, AppleWorks and the tax template.//

Tom Chandler has a degree in finance, and works as Assistant Credit Manager for Antic Publishing, Inc. He uses his Apple IIe for spreadsheets, word processing and a little programming.

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- 3. Winners will be selected in an independently judged random drawing from among all eligible entries received. No substitution for prizes. All prizes will be awarded.
- 4. The Contest is open to all persons 18 years of age and over, except employees and families of Antic and affiliates and participating prize donor companies. Only one prize per household. Winners will be required to sign an affidavit of eligibility and release which must be returned within 14 days. Winners are responsible for any applicable taxes on prizes awarded.
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- 6. Void where prohibited by law. All federal, state and local laws apply.
- 7. Winners will be announced at the drawing on June 1, 1987 at Activision's booth at the **Consumer Electronics Show** in Chicago. II Computing will also announce the winners in the October/ November 1987 issue of the magazine. All prizes will be delivered within 90 days of the winning announcements.



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Please allow 4-6 weeks for delivery of first issue. Canadian and Mexican residents add \$5.00 per year. Other foreign subscriptions add \$10.00 per year. Prepayment in U.S. funds required for all foreign and disk orders. Contest ends May 25, 1987. *Disk requires 64K and Applesoft

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Third Prize:

· Grab Bag of software and books

Punk Dogs, Boxers and Old Fashioned Heroes

by NEIL SHAPIRO

Well, my new Apple IIGS arrived (the special "Woz" limited edition) and I guess like everyone else who has bought that computer I went a little nuts setting it up. Would you believe it took less than ten minutes? And lucky me, I had waiting a preview disk of the world's first commercial game for the Apple IIGS, Activision's Tass Times in Tonetown.

A COLORFUL DIMENSION

I thought the Apple IIGS was a superb machine with its super-res graphics and digital sound. But when the first display screen of Tass Times popped onscreen along with the theme music, I knew right away what a great computer was.

The music wasn't *computer* music—it was simply *music*, catchy and bright, showing off the IIGS's sound ability. But the screen. . .the beautiful drawing of the cartoon dog Ennio was more like a self-illuminated canvas of professional oils rather than a computer screen.

Beyond its graphics, the story is a real corker, with enough plot and puzzles to keep anyone who loves adventures happy.

Gramps, a lovable eccentric scientist, has vanished from his laboratory. Your only clues are what you find in Gramps's lab and the copy of the *Tonetown Times* that's packaged with the game.

Before you jump through that beckoning hoop in Gramps's lab, you'll want to carefully study the *Times*. Trust me, there's just no other way to become *tass*. And you'll surely want to be tass when you enter the dimension of Tonetown, a mixture of our world and that of rock videos. That's where you must find Gramps.

Ennio, the hip talking dog, will help you. So will the design of the game. The screen is divided

into three graphic areas. Spectacular views take up the left-hand portion of the screen. Next to the viewport is a collection of icons which depict such things as taking or dropping an object, looking, talking, giving and a compass. Below those two areas is an inventory area that shows each item you are holding. And finally is a six-line text area which gives descriptions and allows you to enter commands.

The only drawback to this game is with the Apple IIe version. There the graphics are dull, not really up to what could have been done on that machine. It's still a good game on the IIe but I wish they would have used some of that still-standard machine's abilities better. But, if you're lucky enough to have an Apple IIGS then jump through the hoop down to your nearest computer store. Get tass, get tone, get Tass Times in Tonetown today!

POP THAT BUBBLE!

It's ironic that in the same column that I review the first game for the Apple IIGS using that machine's super-res graphics, I am also about to review the first arcade game for the 128K Apple IIe and IIc to use those machines' double hi-res graphics. Why ironic? Because it should have happened long ago.

But, at least, I'm happy to report that **Airheart** from Broderbund Software makes the case that all arcade games should go to double hi-res on these machines. This new game features fabulous graphic details and spellbinding, reflex action.

This, by the way, is not the first time that the game's author Dan Gorlin has helped evolve arcade games on the Apple. His earlier contri-

continued on next page



Neil Shapiro is editorat-large of MacUser Magazine and is also chief sysop of the MAUG Apple group on CompuServe.

FEBRUARY / MARCH 1987

FOR THE FUN OF IT

bution, Choplifter, proved that the arcade game on a micro could challenge the coin-op. Airheart shows that the micro can go beyond the dedicated coin-op arcade in playability, excitement and graphic detail.

Here's the scenario: An old king finds he's about to lose a war. Using the last of his power he hides his infant son in suspended animation somewhere on one of the kingdom's many islands. Robot defenses guard the sleeping tyke; only a legendary hero named Airheart will succeed in fighting his way to the young Prince.

As a provisionary Airheart, the gamer controls the flight of the onscreen hero in his air sled above and below the rolling waves. But before the Prince's rescue, the gamer must recover three mystic treasures: a sword, goblet and harp.

Everything from Bubblers to Whompers stand in the way of completing your mission. These robots are mean, but visually amusing.

WORLD KARATE CHAMPIONSHIP



The Bubbler, a robot shaped like a barber pole, bounces atop the waves spitting bubbles at the air sled. Whompers shatter your sled, Suckers pull it into a deadly embrace and Spitters spit lethal bullets.

Many three-dimensional battles await the gamer. You'll find the visual perspective of the action eye-catching, and the double hi-res graphics provide realistic details.

Playing Airheart is like watching an animated cartoon show that you control. I hope many other manufacturers follow Broderbund's lead in this and begin to utilize the Apple's double hi-res graphics.

HIT THE MAT!

I'm a pretty mellow sort of guy. All us Apple owners are. When we can spend hours turning imaginary opponents into puppy chow why get upset over real life? Well, next time you're in the mood to pummel may I recommend any



TASS TIMES IN TONETOWN

of the following games:

World Karate Championship (Epyx), Fight Night (Accolade) and Bop'N Wrestle (Mindscape).

Graphically, all three games offer interesting renditions of the fighters involved. The karate game has the edge with its colorful backgrounds of various multinational landmarks.

But the real key to a rib-tickling (and/or ribsmashing) time lies in how well the games play and, to me, that means how well the joystick interface has been written.

Fight Night's joystick interface is easiest to use. (They all have keyboard modes as well, but that would only appeal to a masochist). With the fire button down the joystick commands (north, east, south, west directions of the compass) will throw a jab, fake a body blow, throw a body blow and fake a jab. With the fire button up the controls put your hands up to guard your face, move the player to the right, put your hands down to guard your body, move the player left. You can learn the controls in two minutes.

However, there just wasn't enough variety to the actions to sustain a true feeling of simulation. On the other hand, the jabbing and throw-

KERETEKETERE

SEEPKEEKE

SEEREKEEKE

SEEREKEEKE

SEEREKEEKE

SEEREKEEKE

SEEREKEEKE

SEEREKEEKE

SEEREKEEKE

SEEREKEEKE

SHANGHAI

ing of punches move at a fast and furious pace.

One bad problem with Fight Night is that the opponents are not limited to the same set

FOR THE FUN OF IT

of moves. Hu Him (the Chinese opponent), for example, will actually *kick* you and no referee appears to point out that this is, after all, a boxing match. For the arcade lover I recommend this game with the warning that a boxing fan might feel less enthused.

The command set for World Karate Championship requires practice. There are eight possible commands with fire button down, eight more with fire button up—even the joystick's diagonal axes are utilized. With these commands you can punch high and low, leap into the air, spin and lunge, kick high or low, flip a somersault, sweep your opponent's legs from under him and more.

The instruction manual diagrams each of the possible moves and they are logically placed in relation to each other via joystick directions. For the first few games, count on the computer opponent wiping the floor with you. But, after a while, the movements become intuitive. From the standpoint of simulation, the onscreen moves reminded me of the last scenes of the movie *The Karate Kid*, absolutely fluid and beautiful.

Bop'N Wrestle features 24 commands that are possible to send via joystick. While it has the most complete command set, I unfortunately found the commands difficult to memorize and never got to the point where I could use them quickly in response to the onscreen action.

The problem is that there are subsets of commands. For example there are four moves to

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Tass Times in Tonetown Shanghai

Activision
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Mountain View, CA 94039
(415) 960-0410
256K; \$44.95 each
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Airheart

Broderbund 17 Paul Drive San Rafael, CA 94903 (415) 479-1700 128K; \$34.95

Fight Night

Accolade
20833 Stevens Creek Blvd.
Cupertino, CA 95014
(408) 446-5757
64K; \$34.95
CIRCLE 219 ON READER SERVICE CARD

"soften" an opponent, one of which is to grab him. But the same four joystick directions after a grab will mean something entirely different.

On one hand I have no doubt that if a person really learned the Bop'N Wrestle command set this game would be the most accurate simulation of the three. On the other hand, I have as much chance of learning those commands as I would have in a real ring against Hulk Hogan.

Meanwhile, all of these games have two-player options. But, forget it. The Apple II is just not built for two-player games of this type—not with just one joystick port—and it's just too ridiculous to try keyboard control. A few years ago there was something called a Joyport which added another joystick port but the company went out of business and most games never accessed it. Too bad.

PUZZLIN' EVIDENCE

A quick note: If you want a mental challenge, a thought-provoking puzzle and lovely but quiet computer graphics—pick up **Shanghai** from Activision. The game uses a graphic representation of mah-jongg tiles but has nothing else in common with that game. Instead, it's a matching game where the player must match and remove tiles from the board. Far more difficult than it sounds, it's an involving game and easy to spend hour after hour with. Try it, I don't think you'll be disappointed.//

Bop'N Wrestle

Mindscape 3444 Dundee Rd. Northbrook, IL 60062 (312) 480-7667 64K; \$29.95 CIRCLE 220 ON READER SERVICE CARD

World Karate Championship

Epyx 600 Galveston Dr. Redwood City, CA 94063 (415) 366-0606 64K; \$39.95 CIRCLE 218 ON READER SERVICE CARD

ass Times is a real corker.

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UTILITIES

writing means more than just a good word processor.

TEXT APPEAL continued from page 62

someone with an eighth-grade education - that is, a Fog Index of 8-can read the text easily. If the Fog Index on your writing is high, you should probably look for ways to make it easier to read. Perhaps you should use shorter sentences and shorter words.

The alphabetical word list makes it easier to spot misspelled words-a misspelling really jumps out when it's in a list of correctly spelled words. The list also tells you how many different words you use. By looking at the count for each word, you can spot words that you use very frequently - maybe too frequently.

So write now! Then use TEXT.APPEAL to see how you can make your writing better. (By the way, this article has a Fog Index of 8, with 41 sentences, 737 words and 284 unique words.)//

II Computing's Teacher/Parent Tips offer lesson plans to enhance and extend our type-in programs. See the pull-out section in the middle of this issue for lesson plans for TEXT APPEAL.

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*Super efficient design *Accesses standard Apple memory & peripherals *Debugger on disk *\$195.00

continued from page 63

characters have been read in; when there are more than 30 characters, the program breaks the line into two parts-the whole words that will fit in the 30-character column, and the leftover characters that will form the beginning of the next line. The text that will fit on the line is padded with blanks for margins and to make the column exactly 30 characters.

WILLIAM V. R. SMITH

The COLUMN PROBLEM

It's not easy to print out
text in aultiple columns
processors—ther're only
designed to create one-column
pages. To get around that
one control that
not be controlled to the column

AGCI text files, those word
processors will let you
convert your document into an

GCI text file with
you
ise the Gen-Apple-P command
ond "print" the document to
text file.

name of your file and press
RETURN. Now you can press 2
to print your file to the
screen or 3 to print it on
your printer. You can see a
disk catalog by pressing 1,
or return to BASIC by
pressing 4.

HOW DOES IT WORK?

You can design a three-column newsletter!

Next, the program stores the completed line in a string array, O\$(). The program then starts building the next line, using the characters that were left over from the end of the previous line. In this way the first column is built up, a line at a time, until all 50 lines are in array O\$().

Once the first column is complete, the program goes back and begins to fill in the second column. It builds each line in the column, fills it out with blanks and adds it to the end of the correct line in the array; each line is simply tacked onto the line that already exists in the array. When both columns have been formed, the array contains the entire page to be printed—and it's a simple matter for the program to print it, either on the screen or to your printer.

With MULTI.PRINT, it's easy to print out newsletters or notices in two or more columns. If your printer can handle paper that's wider than nine inches, you may even be able to print sideways on the paper—with as many columns as you like! Have fun-experiment-and see just how creative you can be with your text.// IF YOU'D LIKE MORE ARTICLES LIKE THIS ONE, CIRCLE 240 ON OUR READER SERVICE CARD.

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Applesoft's Defined **Function**

by ROGER WAGNER

One of Applesoft BASIC's most often-overlooked features is the defined function. A defined function is a mathematical formula you can set up once in a program. Thereafter, at any point in the program, you can use the formula just by specifying the function name.

A FUNCTION OF NUMBERS

In mathematics, a *function* is just a relationship between an original number (or set of numbers) and some final result. In many ways, any function can be treated as a sort of "black box" that one number goes into and another number comes out of.

For example, you could have a function box that multiplies any number input by 2. Thus, if we input the number 3, the function box gives a result of 6. Functions can be simple, like our multiplier box, or complex, involving lengthy calculations or multiple-number input.

Defined functions in Applesoft are used in two different contexts. The first is when the function is defined: the second is when the function is used in the program.

For example, take the simple case of multiplying a number by 100. If a program has to do this often, as in converting decimal values to a percent, it might look like this:

10 PRINT "HERE IS A LIST OF PERCENT EQUIVALENTS"

20 PRINT

30 PRINT "1/4=";1 / 4 * 100;" PERCENT" 40 PRINT "1/2=";1 / 2 * 100;" PERCENT" 50 PRINT "3/4=";3 / 4 * 100;" PERCENT"

To use a defined function, we must first define the function we want:

DEF FN PC(X) = X * 100

functions in Applesoft are used in two different contexts. The first is when the function is defined: the second is when the function is used in the program.

> Roger Wagner is president of Roger Wagner Publishing, Inc.

The name of the defined function is "PC(X)," and the function multiplies whatever number is input by 100. Notice the way X is used. X is the argument — the value that the defined function will operate on. You don't have to use X in the definition; any numeric variable would do, since it's just a place-holder for the value that the function will use.

Once the function is defined, we can use it instead of the previous calculation like this:

```
5 DEF FN PC(X) = X * 100
10 PRINT "HERE IS A LIST OF PERCENT
EQUIVALENTS"
    PRINT "1/4="; FN PC(1 / 4);"
40 PRINT "1/2="; FN PC(1 / 2);"
50 PRINT "3/4="; FN PC(3 / 4);"
PERCENT"
```

We can use any variable, number or expression with the defined function; whatever value we put between the parentheses will be used to calculate the final result.

FUNCTION WITH CARE

There are some important limits to defined functions, though. First, the expression we use as input must be numeric. Unfortunately, we cannot define string functions. Thus, the statement

```
10 DEF FN TEST (X$) = "CAT" + X$
```

will cause a syntax error, because X\$ is a string variable and the defined expression is a string expression.

Second, only one value can be passed as input to a defined function. Thus, suppose we define a function to calculate averages:

continued on next page

POWER PROGRAMMING

```
10 DEF FN AVG(X) = (X + Y) / 2
```

The argument X can be passed to the function when it's called, but Y is a regular variable. You might use the function AVG(X) like this:

```
10 DEF FN AVG(X) = (X + Y) / 2
20 INPUT "ENTER X,Y: ";A,B
30 Y = B: PRINT "AVERAGE: "; FN AVG(A)
```

The argument doesn't have to be used in the defining expression. For example, this is a completely legal function definition:

```
10 DEF FN TEST(X) = 5
```

In this case, whenever TEST(X) is called, no matter what value is passed the result returned will be 5.

OFF TO SEE THE WIZARD

With all this newfound knowledge in hand, let's see what mischief we can create! We'll start with an off-the-wall application of defined functions: reading the keyboard.

Suppose your program periodically checks to see if a key has been pressed. The usual way of doing it is to check memory location 49152; if it holds a value greater than 127, a key has been pressed; we can clear this keypress by POKEing a value to 49168. In BASIC, it looks like this:

```
10 FOR I = 1 TO 10000

20 KEY = PEEK (49152)

30 IF KEY > 127 THEN PRINT "A KEY HAS

BEEN PRESSED!": POKE 49168,0

40 NEXT I
```

A defined function cuts down the size of our FOR/NEXT loop:

```
5 DEF FN KY(X) = ( PEEK (49152) >
127) * ( PEEK (49152) - 128)
10 FOR I = 1 TO 10000
20 IF FN KY(0) THEN PRINT "A KEY HAS
BEEN PRESSED!": POKE 49168,0
30 NEXT I
```

Notice that the argument X is not used at all in the defining expression—it's just a dummy argument. The function returns the ASCII value of any key that is pressed, or zero if no key is pressed. For example, when the *a* key is pressed, location 49152 will contain the value 225—the ASCII value of *a* plus 128. Thus, FN KY(0) would be:

Can we make the loop even shorter by including the POKE 49168,0 in a defined function? We can—by using *nested* defined functions. For example, let's add this new function definition:

```
10 DEF FN KEY(X) = FN KY(0) + ( PEEK (49168 + (FN KY(0) = 0))) * 0
```

This new function uses the old function KY(X) to check the keyboard. Instead of doing a POKE 49168,0 it uses a PEEK(49168), but it has the same effect. To see how the new function works, let's analyze it for the letter "A":

```
FN KEY(X) = FN KY(0)+(PEEK(49168
+(FN KY(0)=0))) * 0
= 65+(PEEK(49168+(65=0)))*0
= 65+(PEEK(49168+(0))) * 0
= 65+(PEEK(49168+0)) * 0
= 65+(PEEK(49168)) * 0
= 65+0
= 65
```

The new function returns the proper ASCII value for the letter "A" and clears the keypress as well.

Now let's assume that no key has been pressed and a value less than 128 – say, 13 – is lingering on the keyboard:

```
FN KEY(X) = FN KY(0)+(PEEK(49168
+(FN KY(0)=0))) * 0
= 0+(PEEK(49168+(0=0))) * 0
= 0+(PEEK(49168+(1))) * 0
= 0+(PEEK(49168+1)) * 0
= 0+(PEEK(49169)) * 0
= 0+0
= 0
```

Notice that in this case, the logical expression (FN KY(0)=0) yields the result 1, so instead of PEEKing at 49168, we PEEK at 49169, which *doesn't* clear the keyboard—it doesn't really do anything. The function still gives the desired value of zero, indicating no key press.

TITLES OF IMPORTANCE

Although we can't create string functions directly, we can still use defined functions with strings. For example, a classic approach to centering a title on your Apple's 40-column screen looks like this:

```
10 T$ = "THIS IS A TITLE"
20 HTAB 20 - LEN (T$) / 2
30 PRINT T$
```

ny function can be treated as a sort of "black box" that one number goes into, and, in turn, another number comes out of.

You can use a defined function for the calculation like this:

```
10 DEF FN TTL(X) = 20 - LEN (T$) / 2
20 T$ = "THIS IS A TITLE"
30 HTAB FN TTL(0): PRINT T$
```

Note that T\$ must be explicitly used; the function would not work if we assigned the title string to A\$ or X\$.

THE KEYS TO THE KINGDOM

Now consider the problem of menu choices. With a menu-driven program, the program must test the user's input to see if the correct key has been pressed in response to the menu. For example:

```
10 PRINT "1) ADD DATA"
20 PRINT "2) BEGIN A LIST"
30 PRINT "3) CORRECT AN ENTRY"
40 PRINT
50 PRINT "ENTER THE LETTER FOR YOUR
CHOICE: ";
60 GET A$
70 IF A$ < > "1" AND A$ < > "2" AND
A$ < > "3" THEN PRINT CHR$ (7);: GOTO
60
80 X = VAL (A$): ON X GOTO 100,200,300
```

Believe it or not, all that string testing can be combined into a defined function like this:

```
5 DEF FN KY(X) = (A$ = MID$

(T$,1,1) + (A$ = MID$ (T$,2,1)) + (A$

= MID$ (T$,3,1))

10 PRINT "1) ADD DATA"

20 PRINT "2) BEGIN A LIST"

30 PRINT "3) CORRECT AN ENTRY"

40 PRINT

50 PRINT "ENTER THE LETTER FOR YOUR

CHOICE: ";

60 GET A$

70 T$ = "123": IF NOT FN KY(0) THEN

PRINT CHR$ (7);: GOTO 60

80 X = VAL (A$): ON X GOTO 100,200,300
```

In this program, T\$ is set to whatever the acceptable characters for A\$ are. The beauty of this defined function is that it can be used for any response where the program needs specific single characters. If you have more than three menu items, just use successive tests of A\$ versus T\$. The MID\$ function is very forgiving, and doesn't get at all upset if you test more positions in T\$ than there are characters.

This is just a sample of what you can do with defined functions. Next issue we'll explore even more ways of using this extremely powerful feature of Applesoft BASIC.//

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Grammar Gremlins

by JAMES V. TRUNZO

GRAMMAR GREMLINS
Davidson & Associates, Inc.
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Torrance, CA 90505
(213) 534-4070
64K, Apple II+, IIe and IIc
(one or two drives)
\$49.95

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Being an English teacher as well as a free-lance writer, I view educational software with a somewhat cynical eye. When the software enters my subject

area, I become downright bigoted! Upon receiving a copy of **Grammar Gremlins** for review, I decided to subject it to a real test, my nine-year-old daughter, Stephanie. Before I relate her verdict, however, let's get a little background on the package.

Grammar Gremlins is the latest in a series of educational products produced by Davidson & Associates, a company with a good reputation. The program is a fairly comprehensive package, covering basic grammar skills for stu-

dents, grades four through six. Through standard drills (selecting the correct answer from a choice of four) and a pseudo-game, Grammar Gremlins offers over 600 practice sentences that reinforce such topics as contractions, parts of speech, commas, plurals, possessives and even abbreviations.

The program asks the user to select a level of difficulty, with level four the most difficult. Difficulty in Grammar Gremlins means more sophisticated grammatical rules and longer, more complicated sentences from which to work. Each level contains an optional diagnostic pretest that serves to highlight areas of weaknesses, plus a list of specific grammatical areas from which to choose. Once the practice topic has been chosen, Grammar Gremlins drills

through a series of twenty questions or through a game. While the format is typical of many educationally-oriented software programs, Davidson's product goes beyond the usual fluff with several sound educational strategies.

For example, I was impressed by the detail given the various areas covered. At any time during the drill, the program can access rules pertinent to the subject matter being covered. In spite of its importance, this feature is often lacking in educational software. Simply knowing whether an answer is right or wrong without the means to know why serves no purpose.

Additionally, Grammar Gremlins allows a review of items missed at the end of an activity. This feature allows

An army of ant attacked funt Annabelle.

Grammar Gremlins is an effective way to teach children grammar; it offers diagnostics and explanations of errors, a feature often lacking in educational software. "As an aid in learning basic grammar rules, this program receives high marks."

you to focus not only on a specific problem but also on the use of that problem. Just knowing that you misused a comma, for example, isn't nearly as beneficial as knowing that you misused it after a direct address.

Other strong features include:

record-keeping on a data disk to monitor student progress, a print option for hard copies of scores, and a review test to measure improvement. Most useful is the built-in editor. Even with 600 sentences included, the program can become stale. With the built-in editor, you may insert new questions, delete old questions, and even add new rules with their own set of questions. The latter is especially valuable if you wish to get into more obscure rules of punctuation like the use of semicolons in a series.

The "game" element included in Grammar Gremlins pays homage to the old adage "All work and no play. . "but is fairly superfluous. Questions appear at the bottom of the screen, and

the answers are hidden behind windows of a haunted house. Darting eyes go from window to window and a key stroke reveals a potential answer. The faster you determine the correct answer, the more points you accumulate. Amusing and educationally oriented, it's more of the same in a "spooky" format. Even Stephanie tired of it after a few plays.

Ah, yes! Stephanie (my daughter and tester, in case you've forgotten), gave the program the ultimate compliment when she said, "This is like

school." She found the program easy to use, varied in drills, and challenging enough for a precocious fourth grader. She learned several new grammar rules and refreshed her memory on others. For students with problems in grammar, this program would be highly valuable, due to its infinite patience and lack of intimidation. With an adult to supervise the sessions and make use of the editor, Grammar Gremlins can be a very useful tool. As an aid in learning basic grammar rules, Grammar Gremlins receives high marks. Take it from an English teacher who ought to know!//

James V. Trunzo teaches high school and designs fantasy role-playing games.

I Can Write and Be a Writer

by CAROL S. HOLZBERG, Ph.D.

I CAN WRITE and BE A WRITER
Sunburst Communications, Inc.
39 Washington Avenue
Pleasantville, NY 10570
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Apple II+, IIe, and IIc; (one drive)
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Magic Slate: \$89.95
CIRCLE 206 ON READER SERVICE CARD

I Can Write and Be A Writer are two new programs by Stephen Vincent intended to introduce second and third graders respectively to word processing, basic grammar, language arts, and creative writing. Both highly motivational and beautifully executed, each requires the use of Sunburst's Magic Slate (1984), the versatile program that offers word processing in 20, 40, or 80-column format. (These both require the 20-column format.)

The design and format of the two programs are similar. In I Can Write, for example, lessons are grouped into themes which progress from exercises in single-letter or word usage to the writing of different kinds of sentences, paragraphs, and a simple poem. Students are introduced to capital and lower-case letters by writing their names and addresses. In many of the lessons, the students write about themselves through open-ended explorations of personal identity. They describe who they are, where they live, what they enjoy, and what they like to do or eat. They create their very own fanciful monster, endow it with physical attributes with the help of nouns and adjectives, give it a fictitious identity and bring it to life with action verbs and prepositional phrases.

One lesson focuses on the irregular verb "to go" in its variety of forms and tenses; another works with antonyms. A third elaborates upon adverbs of time ("when" words). The link is the student's monster, which becomes an everpresent literary partner. In the exercise entitled "Monster Who?" for example, the students each compose and ask the monster five questions. In this way, they become familiar with the "question" as a special kind of sentence pattern.

Be A Writer is the second program in Sunburst's "Language Arts Curriculum" for Magic Slate. Geared to more advanced students, it can be used without prior knowledge of I Can Write. The lessons begin with the parts of speech and progress to writing simple sentences, expanded sentences, paragraphs and a poem. Starting off with exercises that distinguish among nouns, proper nouns, and abbreviations, the students first create the title page of their book. In the next lesson, they are encouraged to generate an acrostic using their own name. "Phone.List" demonstrates how to obtain, write, and make copies of important phone numbers, focusing on Magic Slate's search and replace function. Imaginary characters named Giant George and Ruby Robot, along

These lively programs, geared for the classroom, enhance the Magic Slate word processor and work well as tools for teaching children to write creatively. Sunburst would do well to continue producing computerassisted creative writing and language arts development programs.

with a friendly dragon, come alive in the early lessons to foster creative thinking and descriptive writing.

Students go on to create commands to make a recipe for Giant George's "Mountain Soup," write statements in answer to Ruby's questions, interrogate the dragon, expand on explanations using the connecting word "because," and rearrange scrambled sentences into a coherent short paragraph about OPPOSITES p. 15

A. Complete each
monster sentence
with an opposite:
EXAMPLE: I am
happy.
The monster is sad.

1. I am little.
 The monster is
big.
2. I skip fast.
 The monster
skips slowly.
3. I jump high.
 The monster
jumps low.
4. I run into the
light.
 The monster runs
into the dark.
5. I am found.
 The monster is
lost.
B. SAVE AND PRINT.

A PAGE FROM MY I CAN WRITE! BOOK

Ruby and George visiting the moon. The last three lessons allow the students to produce a letter, a poem and story, and offer a brief review of the language arts skills learned in previous exercises.

In both I Can Write and Be A Writer, each lesson builds upon previously taught materials and stresses flexibility and exploration. The 25 exercises are intended as a supplement rather than a substitute for the more traditional language arts program. I was surprised that working through the individual lessons functioned as a language arts review for me.

Once the students complete an exercise by changing or adding to the text, they can save their work onto their individual data disks and then print it out in 20-column type. The large type is excellent for young students and may even prove helpful to the visually impaired. All completed lessons become pages in the individual My I Can Write! Book or My Be A Writer! Book. Students create and print their own book cover, place the completed work in a folder, and embellish the pages with art work that reflects the contents or object of the lessons. When My I Can Write! Book is completed, they have drawings of themselves and other students, their school, home, scary mon-

continued on next page

sters of their dreams, and more. When My Be A Writer! Book is completed, the drawings include the author's face, a sketch of where Giant George lives and what he looks like, the dragon, a picnic, a favorite funny food, and other creative expressions.

Even though both programs are specifically designed to teach and reinforce the commands of Magic Slate, the emphasis is always on imagination, play and fun. It is not necessary to be familiar with Magic Slate to do the various exercises. But in working through the lessons, the students inevitably will pick up a number of Magic Slate functions. By the end of the 25 exercises of either program, the students also will be able to load, save, and print files with confidence. Because the teacher does not focus attention on the computer itself. the machine becomes a natural and unobtrusive teaching instrument.

These products have been developed for use in elementary school rather than the home. In combination, these programs make for a very good software package. The price is reasonable, for Sunburst provides more than just a program and a backup diskette. There is a handy "Quick Reference Sheet," which can be copied and shared with the students. There is also an invaluable "Teacher's Guide" with lesson plans, and lots more ancillary teaching materials.

Sunburst provides free 30-day classroom previews, a lifetime replacement warranty for lost, damaged or defective programs, free updates, computer lab packages for schools with more than one computer and grants permission to make as many copies of the data disk as necessary. Sunburst also guarantees satisfaction and promises a full refund if at any time its programs do not fulfill the teacher's needs.//

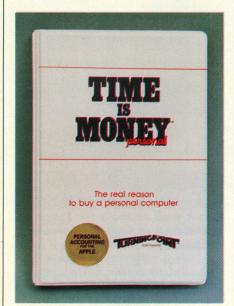
Carol S. Holzberg is vice president of a company specializing in hydroelectric equipment. She uses Apple computers daily in business, writing, and with her two small children.

Time is Money

by ROBERT GROSSBLATT

TIME IS MONEY
Turning Point Software
230 Western Ave.
Boston, MA 02134
(617) 782-4877
Apple II series
48K, \$100.00
CIRCLE 242 ON READER SERVICE CARD

Even though we've all earned medals for blasting aliens, most of our serious computer time is spent managing either words, data or money. Deciding which programs you should use to handle these three jobs is not a trivial task. You have to choose carefully because programs cost money and take time to learn.



Probably the most important decision is choosing which package to use for managing your money. Now, there's lots of software out there to help you juggle your cash: some packages are worth a look, some are worth a try and some are worthless.

Time Is Money is in a different league altogether. It's the fastest, most versatile, most powerful program you can get for keeping track of your money. In addition to all that, it's incredibly easy to use. Not only did my accountant flip when he saw it, he even went out and bought a copy for himself.

After you tell Time Is Money about your hardware and give it the name and start year for your financial books, the program can create your data disks. Once you've done this, the program disk can be put away since the data disks not only store your financial information but also contain the Time Is Money software as well. All you have to do to start using the program is put the data disk in the drive and turn on the computer.

As with any accounting package, the first step in setting up a system is to define account names, expense categories, and sources of income. Even at this early stage, the power and flexibility of Time Is Money is evident. You can have 240 accounts, 240 expenses, 240 sources of income and 240 different income types. There's no need to define everything right at the beginning since, unlike most other software, Time Is Money will let you create new accounts or change old ones at any time no matter how much data you've already

Time is Money is fast, wellorganized and easy to use. For \$100, you get your money's worth and, best yet, this reviewer's accountant bought a copy for himself soon after seeing it in action!

stored on the disk. And if you realize in July that you've left out data for January, all you have to do is type in the data. Time Is Money will automatically put it where it belongs.

Each data disk is divided into two books, only one of which can be in the computer at any one time. And even though everything is memory resident, some really slick programming allows you to have more than two thousand entries in each book. Moving around in the program is a snap. The manual is really excellent, help screens are available, and the current command options are always shown on the bottom of the screen. Time Is Money is

continued on page 82

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Regardless of which version, you will be amazed at the graphics. This is the only statistically authentic game to give you all 22 players on the screen at once going through the actual play in animated action.



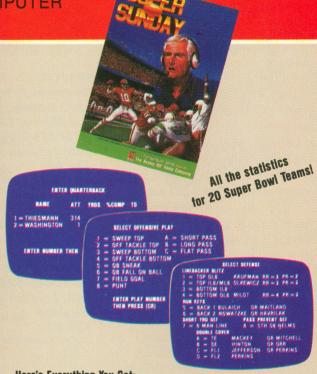
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TIME IS MONEY continued from page 80

so logically organized, so well written, and, despite its complexity, so easy to use, you'll feel right at home with it after the first ten minutes.

And the program isn't just fast—it's FAST. Eight seconds after you turn on the computer, the data is loaded and you're looking at the opening menu. Since both the program and your data are memory resident, even the most complex search never takes more than two or three seconds. Printed reports of every conceivable kind are never more than two keystrokes away and, if you're keen on graphics, you can plot anything against anything—on the screen or your printer.

It's impossible to do justice to a dynamite program like Time Is Money in the limited space of a review. It does even more than you could possibly want, and everybody at Turning Point Software is very friendly, willing to listen, and anxious to help. The bottom line is that for one hundred taxdeductible dollars you can get yourself a program that's so powerful and perfectly put together you'll wish you had written it yourself.//

Robert Grossblatt contributes to Radio Electronics and other publications. He lives in New York City.

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Skyfox and Sundog

by JOHN DI PRETE

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SUNDOG: Frozen Legacy Accolade, Inc. 20833 Stevens Creek Blvd. Cupertino, CA 95014 (408) 446-5757 64K; joystick with two buttons required 539.95

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SKYFOX

Einstein discovered in 1905 that motion is relative to an observer's reference point. The principle also applies to one's subjective perception of the phenomenon. When a monitor displays three-dimensional images that engulf you, do you always know what's really moving?

Scientists believe that "middle ear" pressures play a role in motion sickness. However, as noted above, your mind's eye can cause a similar type of feeling. You just need the right conditions: an Apple monitor, a high-resolution display, and your imagination.

Incorporating their own styles of perceptual relativity, many exceptional

games have been designed to harness the psychophysiological effects of locomotion. These games blissfully disrupt staid, static realms of equilibrium and turn motion sickness into exhilaration—like the experience of riding a roller coaster.

The Electronic Arts game Skyfox, for example, creates a feeling of forward-movement in the stationary "jet-fighter." Your computer screen reveals an outdoor environment advancing at varying speeds toward the player. You fly in a 3-D setting over tanks on the ground, and travel past high-flying aircraft and floating cities. Clouds glide through the heavens toward you; green terrain swirls by in every direction. The Ultimate Question, "Who's at rest?" cannot be resolved.

You have the capacity to hover in mid-air and turn in place, bank your fighter, climb or de-escalate. (When careening too wildly, beware of dizzy spells.) Skyfox shoots an unlimited supply of repeating lead bullets, plus five heat-seakers and five guided missiles. Graphics and sound depict a fantastic scenario; enemy flak richochets helterskelter off your windshield, jet-engines shudder like thunder all about you.

Handling Skyfox is pure joy. Your joystick enables flexible maneuvers and a wide range of speed and direction control. Technical features include tactical display, automatic pilot, and radar screen. The latter shows an alternate view of your approach, complete with grid, cross-hairs, and peripheral vision. This display also reveals useful range information.

Portrayal of motion is breathtakingly real; inertia's stranglehold appears to disintegrate. I had only one complaint, concerning the liftoffs - they consisted merely of streaming lines on a plain dull background, and were unconvincing. But the rest of Skyfox puts you in the pilot's seat.

Then there's Sundog, also no lightweight, and a contender for spacemotion prizes. Much ballyhooed (and rightfully so) for exciting graphics, complexity and sheer detail, Sundog offers the best in role-playing adventure games. Your mission is to find a

group of cryogenically suspended colonists and to transport them to a planet, Jondd, on which you will build a society. On your journey you must travel to 18 planets in 12 different solar systems, trade and sell goods, and ward off pirates. Action takes place both in space (on your freighter) and while exploring cities.

Motion-wise, you experience several modes of first-person transit:

Liftdown — During this phase, your navigational viewscreen reveals a blanket of descending stars, followed by a whirling planet; the latter soon envelopes the screen, and suddenly you've touched down with a city looming in the distance.

Scanning—Your sensors show stars in a tactical display moving in every possible direction, two-dimensionally—

Motion is here to stay, and Skyfox and Sundog are prime examples on the Apple II.

up, down or sideways—in a smooth pursuit pattern. At times I felt that I really was spinning on board that freighter.

Hyperspace—When you engage warp drive, the stars edge out three-dimensionally toward you, and then, suddenly, streak out and past your ship in every direction, simultaneously. I found the "blurring" effect nice, but not to the point where I actually felt time "stand still."

The above scenes allow you to control velocity, from turtle-slow to being-swept-off-your-feet. It's up to you; the Commander of Fate, and. . .Sundog. It's a science fiction classic.

Motion is here to stay. Perhaps a future designer will freeze time, at least in the subjective sense, similar to how we feel when our stomachs flip-flop in response to non-existent motion. Just speed up the images, remove the jumble of senseless information, and "trick" the viewer into a faster-than-light frame of mind. Incredible what they're doing

with software these days.

As far as the present goes, Skyfox and Sundog depict some of the finest qualities now available in motion software. The following games also induce a vivid sense of movement and are fun to play.//

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John DiPrete has written about motion in the Indian Journal of Theoretical Physics, and reviews software for several computer magazines.

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APPLE PROGRAMMER'S AND DEVELOPER'S ASSOCIATION

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Hardware Reference, Firmware Reference, Toolbox Reference, Programmer's Introduction, Programmer's Workshop, Programmer's Workshop C, Assembler Tool Interfaces, C Tool

Interfaces, ProDOS 16 Reference.

We are looking for good languages, utilities, and development tools (particularly program shells) that run in native 65816 mode on the IIGs. Our catalog will list these as they become available.



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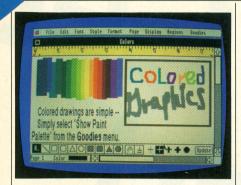


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KIDSTIME II, Great Wave Software, 104 Gilbert Avenue, Menlo Park, CA 94025, (415) 325-2202. \$39.95

KidsTime II consists of two educational programs for the IIGS ABKey and KidsNotes. ABKey is a letter recognition program which uses the IIGS's unique sound and graphics to help children improve their keyboard skills by identifying letters and graphics on screen.

KidsNotes is a single voice music program which introduces children to the fundamentals of music. An assortment of nursery rhymes and other familiar melodies are provided on the disk. Children can experiment with these or compose their own simple melodies, play them back and edit them.

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SUPERSONIC, MDIdeas, Inc., 1111 Triton Drive, #205, Foster City, CA 94404, (415) 573-0580, \$59.95

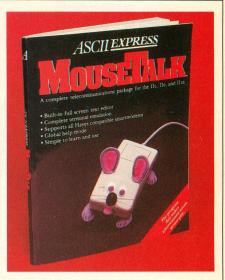
The **SuperSonic** board plugs into any slot inside the IIGS to provide true stereo line level output to connect to your stereo. SuperSonic also features a built-in .5 watt amplifier that provides a special high-level output to drive 8 ohm speakers or headphones. CIRCLE 260 ON READER SERVICE CARD



VIP PROFESSIONAL, VIP Technologies, ISD Marketing, 2651 John St., Unit 3, Markham, Ontario L3R 2W5 Canada, (416) 479-1880, \$299.95

VIP Professional is an integrated spreadsheet, database and graphics program for the IIGS. It features all the power and functionality of Lotus 1-2-3, and includes the easy-to-use mouse interface complete with icons, pull down menus and dialog boxes. VIP's 8,192-row by 256-column spreadsheet uses the same keystrokes, commands, and macros as Lotus 1-2-3 to insure 100% compatibility with the hundreds of books, templates and special applications already available. In fact, VIP can even read and write Lotus-compatible files. In addition, the package contains a number of utilities that allow you to import files from AppleWorks, Supercalc and Multiplan.

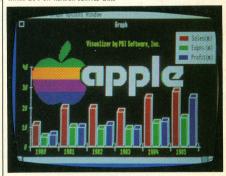
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MOUSETALK, United Software Industries, 8399 Topanga Canyon Blvd., Suite 200, Canoga Park, CA 91304. (818) 887-5800, \$149.95

MouseTalk combines the Macintosh style interface with features like: onscreen help, macros, complete terminal emulation and a built-in full-screen editor. You can even simultaneously receive files to disk, the editor, or to your printer. Also works with the IIc and 128K IIe.

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VISUALIZER, PBI Software, Inc., 1111 Triton Drive, #201, Foster City, CA 94404, (415) 349-8765, \$79.95

Visualizer lets you create high quality color graphs using the IIGS's super hi-res graphics. A wide variety of pie, bar and plotted graphs can be created from a Visualizer data sheet or by importing information from an AppleWorks file. Visualizer supports the ImageWriter II so color printouts are also possible.

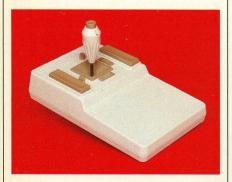
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LAN-TECH EDUCATIONAL NETWORK, LAN-Tech, 4501 North 22nd Street, Suite 220, Phoenix, AZ 85016, (602) 995-7746, \$602 (includes software, interface and cable), \$202 (interface and cable only) LAN-Tech is a local area network for educators that provides resource sharing for up to 128 Apple II+s and IIes. The network allows connection of eight floppy drives and one hard disk drive. A single terminal designated as the "teacher's" station can monitor disk requests made at any of the other terminals.

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THE RIGHT JOB, Sunburst Communications, 39 Washington Ave., Pleasant-ville, NY 10570, 800-431-1934, \$189 The Right Job is an interactive career development program designed to help special-ed and other non-college-bound students match their interests and skills with available jobs. Students are shown how to fill out job applications, read the classifieds, and prepare for and conduct themselves at interviews.

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MACH IV JOYSTICK, CH Products, 1225 Stone Drive, San Marcos, CA 92069, (619) 744-8546, \$89.95

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WALT DISNEY: CARD & PARTY SHOP AND COMIC STRIP MAKER, Bantam Electronic Publishing, 666 Fifth Avenue, New York, NY 10103, 800-223-6834 ext. 479, \$39.95 each

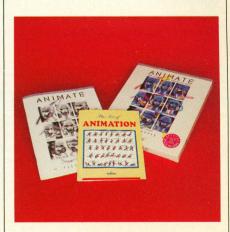
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KYAN PASCAL AND TOOLKITS, Kyan Software, Inc., 1850 Union Street, #183, San Francisco, CA 94123, (415) 626-2080, \$69.95

Kyan Pascal version 2.0 is a complete ProDOS-based Pascal programming language. It includes an 80-column text editor, compiler and macro-assembler. It also features a number of Pascal extensions such as "include" files, object module chaining, string handling and graphics. In addition Kyan is offering six new toolkits to aid programmers, including System Utilities, Mousetext, Advanced Graphics, TurtleGraphics, MouseGraphics and a Code Optimizer Toolkit. Prices for the Toolkits range from \$29.95 to \$149.95.

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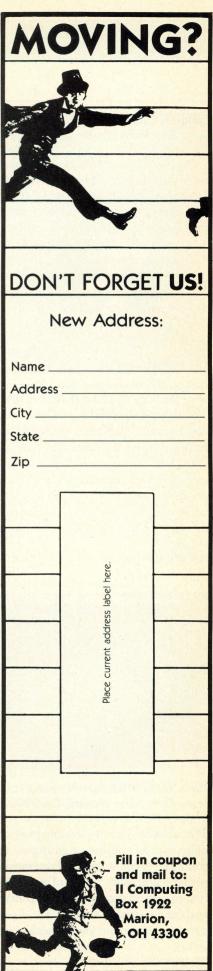
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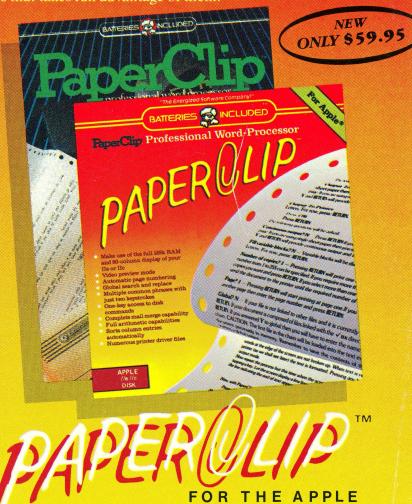
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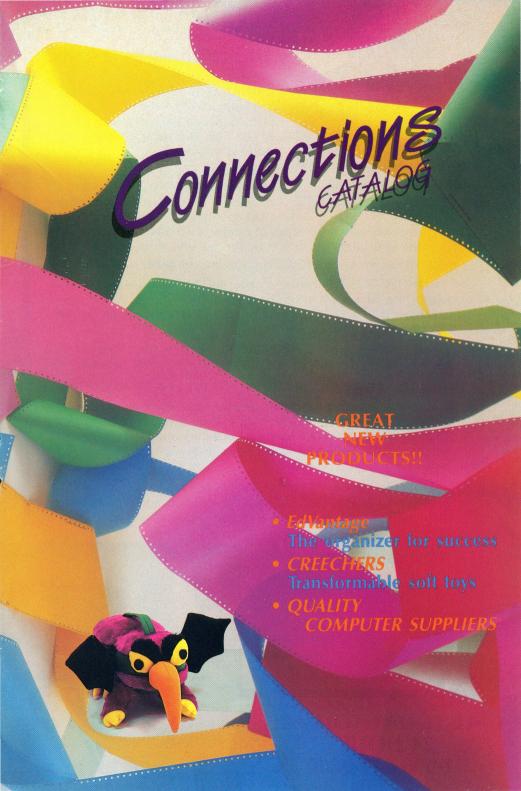
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February/March 1987

This card is valid until April 30, 1987.

This card is valid until April 30, 1987.

February/March 1987





Dear Valued Customer:

11 11 11 11

Welcome to our third anniversary catalog. Your support and loyalty has helped us provide thousands of people around the world with some of the best and most unique computer products.

We come to you this time with a new name—CONNECTIONS—and a new look! These changes are more than cosmetic. They reflect our

decision to broaden the types of products we offer and reach out to bring you items that are truly unique and different.

The BriteLine name will still apply to the computer related items.

CONNECTIONS is proud to present the brand new EdVantage^M line of organizers. There's nothing like it. A full size organizer ($8\frac{1}{2}$ '' x 11'') designed for success. Take control—get the EdVantage.

And for great fun—CONNECTIONS presents the Creechers^{IN}. It's a toy, it's educational, it's a transformer, it's wonderful!

Both EdVantage and Creechers are exclusive to CONNECTIONS.

And now ordering has never been so easy. Our new catalog is designed to give you indepth feature information on all CONNECTION products which we back with our unconditional Guarantee of Complete Satisfaction. Our Customer Service staff is ready to help you.

When you buy from CONNECTIONS you can be sure to get the best AVAILABILITY, PRICE, QUALITY, SERVICE, and new exciting PRODUCTS. Call us at 1-800-643-0800, 24 hours a day.

CONNECTIONS-

something you can depend on.

Yours Truly,

Ken Grant, President

CALL TODAY TOLL FREE

24 HOURS

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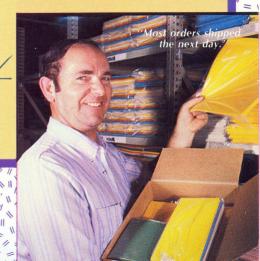
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Print T-Shirts With Your Computer!

Now you too can design and print your own T-shirts with a special ribbon, color pens and your printer. A special heat activated ink allows you to transfer an image onto a T-shirt, penetrating the fabric for a longlasting, washable image.

In order to print out words you must either use a software program which reverses the printout (e.g. Print Shop™ Apple II; Version 2, MacPaint™, Print Shop™ Companion or the IBM version of Print ShopTM), or use a regular ribbon instead of the heat transfer and print the image on our special transfer sheets. Reversing is usually not necessary for graphics that don't have words. You should get between 25 and 90 transfers per ribbon, depending upon the density of your graphics. After printing the image, use the special coloring pens to give your transfer additional color. Then iron the transfer onto a T-shirt or

other fabric. Complete, clear instructions are included with each order.

Ribbons are available for Apple, Epson/IBM, and Okidata printers in red, green, blue, yellow and black.

Coloring pens are available in red,



Design custom color T-shirts. Great for teams, parties, gifts, personalized clothing and much, much more.

Available Print Accessories

Heat Transfer Ribbon and 5 Coloring Pens (one of each color)

* Transfer Set #1 \$24.95 (Specify ribbon type and color)

* Transfer Set for Okidata printers #1C \$19.95 (Specify color)

Heat Transfer Ribbon only

"A great product.

Easy to use

* Transfer Ribbon #R \$14.95 (Specify ribbon type and color)

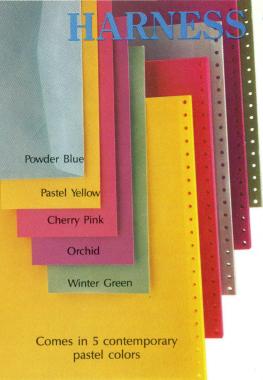
* Transfer Ribbon for Okidata printers #RC \$9.95 (Specify color)

40 Transfer Sheets and 5 Coloring Pens

* Transfer Sheets #T2 \$24.95

5 Jumbo Coloring Pens (One of each color)

* lumbo Pens #TI \$19.95



Envelope Pak

An assortment of matching envelopes in either size (see Matching Envelopes). Contains 200 pieces of 40 envelopes per color. *Pastel Envelope Pak #XLA \$14.95

Matching Envelopes

Matching envelopes come in two sizes. GREETING CARD size fits an 8½" x 11" sheet folded in quarters. This size is perfect for invitations, announcements, greeting cards, etc. The BUSINESS size is the standard size that fits an 8½" x 11" sheet folded in thirds.

 50 envelopes 	\$ 5.95
 100 envelopes 	\$ 8.95
 250 envelopes 	\$19.45
 500 envelopes 	\$34.45
• 1,000 envelopes	\$60.45

*Pastel envelopes #XL (Specify color, size and quantity.)

THE POWER

PASTELS

Say It Subtly!

Why use plain, boring white paper? Let your personality shine through with the warmth of our new pastel colors. Also great for color-identifying different types of documents in your business.

Made from medium-weight 20 lb. paper. It has a "clean-edge" perforation that tears smooth. The size is 9½" x 11" which tears down to a standard 8½" x 11".

Matching envelopes made from the same quality paper are also available.

Jumbo Pak

This contains a large assortment of paper and envelopes. All colors and sizes are included. Package includes 800 pieces:

- 400 sheets of paper (80 of each color)
- 200 greeting card size envelopes (40 of each color)
- 200 business size envelopes (40 of each color)
- *Pastel lumbo #1LA \$34.95

Sampler Pak

This smaller assortment has all of the colors and sizes. Package includes 350 pieces:

- 200 sheets of paper (40 of each color)
- 75 greeting card size envelopes (15 of each color)
- 75 business size envelopes (15 of each color)
- *Pastel Sampler #2LA \$14.95

Rainbow Pak

An assortment of paper only—all 5 colors. 400 sheets (80 of each color).

*Pastel Rainbow #PLA \$14.95

Color Paper

Paper is also available separately so that you can mix and match according to your own tastes:

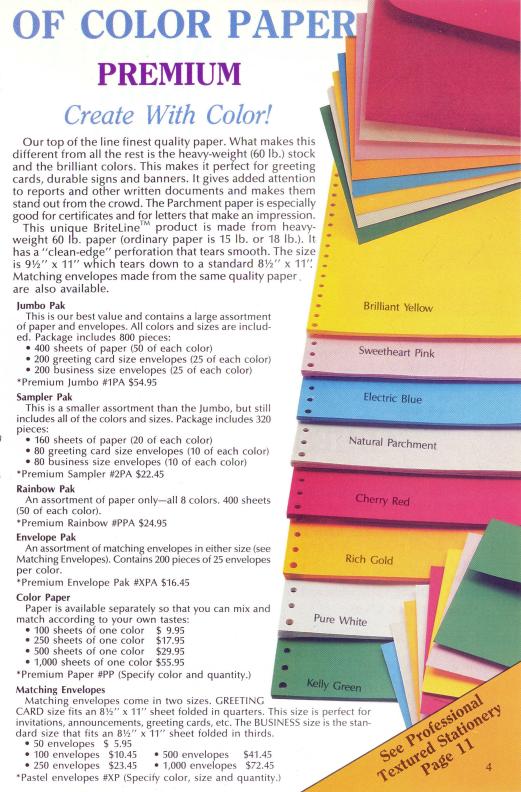
- 100 sheets of one color \$ 5.95
 - 250 sheets of one color500 sheets of one color\$10.95\$19.45
 - 1,000 sheets of one color \$33.45

*Pastel Paper #PL

(Specify color and quantity.)

"You never get a second chance to make a first impression." —The Color Workshop, Walnut Creek, California

CALL TODAY TOLL FREE 24 HOURS 1-800-643-0800



• 500 envelopes • 1,000 envelopes \$72.45

*Pastel envelopes #XP (Specify color, size and quantity.)



STATIONERY

INDEX CARDS

Color Code Your Index Files

Indexing information is a simple task with BriteLine™ pastel index cards. These perforated cards come in fabulous colors in two sizes making the job of getting organized easy. Think of the endless possibilities: recipe cards, projects, separating business and personal addresses, inventory color coding, client cards, and the list continues. The jumbo size is perfect for postcards, too!

Single Color

Also available by the color: 100 cards of a single color (specify color)

*Cards #CL \$2.45 (3 x 5 size)

*Jumbo Cards #IL \$2.95 (4 x 6 size)

ADHESIVE LABELS

The Finishing Touch For Envelopes

Add flair and call attention to your envelopes! Whereas a conventional white label is often perceived as impersonal, a color label adds warmth and personality. Now a boring white envelope can have pizazz!! Also, the special "clear" labels can be used to create interesting effects.

Available in four colors plus white and clear.

Label Pak

This is an assortment of 1,440 labels, 240 of each color plus white and clear.

This is an assortment of 500 cards, 100

of each color. (White not included.)

*Card Pak #CLA \$\$11.95 (3 x 5 size)
*Jumbo Card Pak #JLA \$12.95

(4 x 6 size)

*Label Pak #LLA \$14.95

Single Color

Also available by the color. 1,000 labels of single color: Color \$7.95, Clear \$26.95, White \$6.95

*Labels #LL (Specify color)

Now available in new clear labels!

Pastel Rose

•Mint Green

1 2 20 0 0 0 0 0

Canary Yellow

•Pure White

•Robin's Egg Blue

5

ACCESSORIES

ENVELOPES

Send your message in a BIG Way!

These large and brilliantly colored envelopes are perfect for sending banners or signs without having to fold them up. Great for jumbo birthday cards, get well cards and special occasions. For the card that will be remembered.

The envelopes are made from the same high quality heavy weight stock (60 lb.) as the premium paper and come in 5 vibrant colors. Choose the same color as your banner/sign or select a complementary color. Either way, your message will be special. The envelopes are slightly oversized (10" x 12") so that you can send banners or signs with or without the margins.

TO: MOM



FOR BIG BOLD MESSAGES

Banner Assortment Pak

This is an assortment of 50 envelopes, 10 of each color.

*Banner Assortment Pak #NPA \$15.45

Banner Pak

10 envelopes and 100 sheets of premium banner paper.

*Banner Pak #BP \$10.95

Single Color

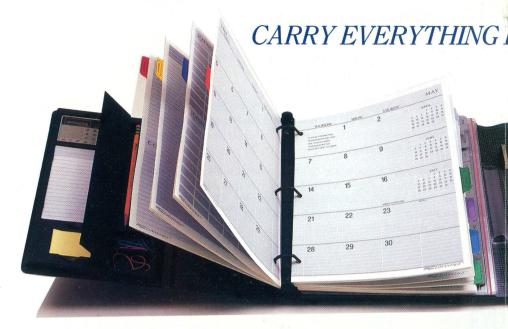
Also available by the color: 50 envelopes of single color \$13.95 100 envelopes of single color \$27.95

*Banner Envelopes # (Specify color and quantity)

ORDER TODAY TOLL FREE 24 HOURS

1-800-643-0800

EDVA! THE ORGANIZE



YOU'LL WONDER HOW YOU E

EdVantage was carefully designed and tested. Most of the component elsewhere. The binder, with its unique "ProDesk" wrap-around flap closur is custom made only by **EdVantage**. Great care has been taken developing functional and flexible. In addition, the forms, with their subtle tonal gradation.

When you carry your **EdVantage**, people will know that you're a profe and plans to get there. **EdVantage** is truly a unique item. It's beautiful, it fee

Available in four versions. Each version includes:

- Executive: Weekly Calendar, Project Plans, Expense Reports, Meeting Business Card Holder plus standard forms and inserts. #EDE \$69.95
- Teacher: Monthly Calendar, Lesson Plans, Grade Sheets, Attendance Recustudent Information plus standard forms and inserts. #EDV \$69.95
- Education Administrator: Project Plans, Weekly Calendar, Meeting Agend Observations, Vinyl Business Card Holder plus standard forms and inse
- Student Version: Monthly Calendar, Class Schedule plus standard forms a Standard Forms and Inserts: Checklist, Communique, Dates to Remember and Address, Goal Achievement, Classified, Tab Stickers, Ruled Paper, Larg Pad, Pen, Calculator, Ruler, Dividers, Paper Clips, Vinyl Zip Lock Pouch, Vi Photo Holder, Post Its, and Guide on Time Management and How to Use

VTAGE R FOR SUCCESS

IN ONE ORGANIZED ATTRACTIVE BINDER

- Beautifully designed forms including calendar, check lists, notes, memos, names & addresses, goal achievement, and much more.
- Guide on time management and how to use your organizer to the best EdVantage.
- Standard 8½" x 11" 3-ring format.

- Padded custom binder with velcro closure flap.
- Includes multi-function calculator, pen and paper clips.
- Custom tray to hold note pad, post its, pens, etc.
- Vinyl pouches for photos, business cards, and odds & ends.

EdVantage helps you:

- Get on top and stay on top of your work and life.
- Achieve your personal and professional goals.
- Feel good about what you can and have achieved.
- Present a professional image.

VER GOT ALONG WITHOUT IT

's cannot be obtained e, and 8½" x 11" format, g the forms to be both ons, have a designer flair. ssional who has a goal els good, and it works!!

Agenda/Minutes, Vinyl

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da/Minutes, Classroom erts. #EDA \$69.95

and inserts. #EDS \$69.95 c, Large Envelope, Name ge Note Pad, Small Note inyl Sheet Holder, Vinyl se *EdVantage*. *EdVantage

Please indicate preferred version: Executive, Teacher, Adminstrator, or Student on order form, as indicated above. Only \$69.95.



"Get the edge with EdVantage."

PRINTER RIBBONS

BriteLine™ printer ribbons are available in six rich dramatic colors that bring your creations to life! It's amazing how much difference a color ribbon can make in getting your message across.

These high quality nylon fabric ribbons meet or exceed printer manufacturer's specifications, and are 100% compatible with your original ribbons. These ribbons are precisely inked to provide clear, crisp printing and trouble-free operation for every impression.



Coordinate your stationery and ink ribbons. Now you can print documents, reports, letters and memos in colors most often selected by professional printing services.

TOLL FREE 1-800-643-0800

FOR THE PROFESSIONAL TEXTURED STATIONERY

For a Personal and Professional Touch!

This paper is textured with a laid finish. It has the look and feel of fine quality stationery. No one will believe that this is pin-feed computer paper! Available in 5 professional understated hues.

Perfect for personalized notes and letters. Also excellent for resumes, cover letters, and those special reports.

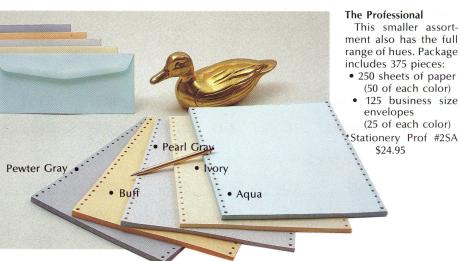
Made from textured 20 lb. paper. It has a "clean-edge" perforation that tears smooth. The size is $9\frac{1}{2}$ " x 11" which tears down to a standard $8\frac{1}{2}$ " x 11". Matching envelopes made from the same quality paper are also available.

The Executive

This contains a large assortment of paper and envelopes. All hues are included. Package includes 750 pieces:

- 500 sheets of paper (100 of each color)
- *Stationery Exec #1SA \$49.95

• 250 business size envelopes (50 of each color)



Yuppie Pak

Paper and matching envelopes of your favorite color. Package includes 375 pieces:

- 250 sheets of paper
- 125 matching business envelopes
- *Yuppie Pak #3S \$24.95

Color Paper

Paper is also available separately so that you can mix and match according to your own tastes:

- 100 sheets of one color \$ 9.95
- 250 sheets of one color \$17.95
- 500 sheets of one color \$29.95 1.000 sheets of one color \$55.95
- *Stationery Paper #PS

(Specify color and quantity.)

Matching Envelopes

Matching envelopes are available in standard BUSINESS size that fits an 81/2" x 11" sheet folded in thirds

neet loided in tillus.	
 50 envelopes 	\$ 7.45
• 100 envelopes	\$11.45
• 250 envelopes	\$27.45
• 500 envelopes	\$48.45
• 1,000 envelopes	\$83.95

*Stationery Envelopes #BS

(Specify color, size and quantity.)

USING A PRINTER PRINTER STAND

Not Just Another Printer Stand!

If you're like us, your computer paper often gets jammed trying to feed into your printer from under the table or desk. Worse yet, since we handle dozens of different kinds of paper, we're constantly changing the type of paper in the printers—crawling back under the desk to thread the paper up for someone to grab. THERE MUST BE A BETTER WAY!

Well, there finally is! We bring you a simple, elegant and inexpensive solution. This printer stand comes in two versions. The basic version sits under your printer and gives you a place to put your paper supply. This keeps your output from piling up on your supply stack and jamming things up.

But the greatest advantage comes with the deluxe version which has a special feeder that permits you to keep several different types of paper at ready (no more crawling under the table, except when you change boxes)! It's designed to handle up to five different papers at once, but we've tried it and found that it works best when you limit the number to three (one under the stand, and two on the floor). Even so, this is a lot better than before, and saves the ol' back. The special take-up tray keeps the output from piling up on the supply stacks. (Assembly required.)

Basic stand

*Printer Stand #SB \$24.95

Deluxe model with take-up tray and feeder holder

*Deluxe Printer Stand #SD \$34.95

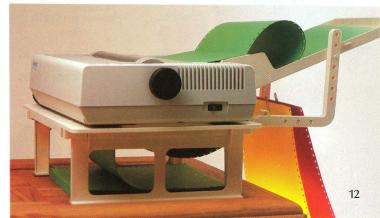
Deluxe model with extra wide take-up tray and feeder holder

*Deluxe Wide Printer Stand #SD2 \$39.95

Now there's an easy way to use a variety of color pinfeed paper.

CALL TODAY TOLL FREE 24 HOURS 1-800 643-0800

"You can change paper in seconds."









Creechers are going fast!
Order today!



THE ORIGINAL CRECKETS

100 toys in 1

Feel the excitement of creating your own cuddly pals with these soft transformable Creechers $^{\text{\tiny IM}}$. Adults and kids all share the fun.

Let your imagination go wild. Stick the arms, legs, eyes and other parts anywhere on the body and design your own Creecher.

Made of highest quality materials for long-lasting durability. Each part has a Velcro® patch that easily attaches to the soft body.

- Transformable—unlimited variations with one Creecher
 - Educational—Develops your child's creativity
 - Durable—Long-lasting play value
 Soft, Colorful and Cuddly!!!

*Creechers

Alien CR01 \$29.95

*Hats

Alien Hat

CR03 \$16.95

Monster Hat

CR04 \$16.95

20



Monster CR02 \$29.95



Monster

CONNECTIONSTM HOW TO ORDER

1-800-643-0800 24 HOURS A DAY

Our friendly Customer Service representatives will gladly assist you with your questions and rush your order to you.

MAIL If you don't have a charge card or wish to pay by check, then just fill out the order form below and send it to us.

PAYMENT We accept VISA, MasterCard, American Express, Diner's Club, money orders, and preapproved purchase orders from public institutions. Minimum credit card order is \$15. Make checks payable to Connections.

SHIPPING AND HANDLING For orders up to \$80 within the continental US, add \$2.00 plus 10% for shipping charges. If the order is greater than \$80 or the merchandise is to be shipped to Hawaii, Alaska or a foreign country, exact shipping charges are required—please call for charges. All merchandise will normally be shipped regular UPS. Special next day delivery available upon

request-call for charges.

Most orders will be shipped the next day. If we are temporarily out of stock in high demand items and anticipate a delay of more than 20 days, we will advise you by mail.

PRICES Pri	ces are subj	ect to change	ORDER FO	RM			
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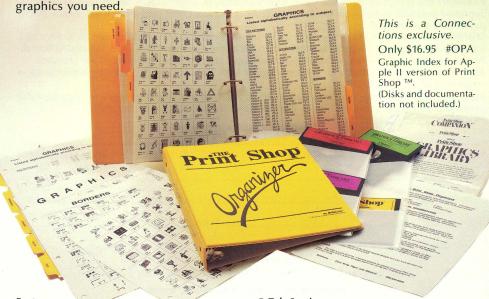
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PRINT SHOP ORGANIZER

Get Organized!

Keep all of your Print Shop[™] valuables in one easy-to-carry system! This custom binder has a place for all your Print Shop[™] materials. It holds your program disks, data disks, documentation, and reference cards.

In addition, The Print Shop Organizer has a special Graphics Index. Just go to the Index and it will quickly tell you exactly where to find (which disk and side) the



Features:

- · Distinctive yellow three-ring binder
- 4 anti-static vinyl pocket pages. Each page holds two diskettes.
- Graphics Index—An exclusive Graphics Index for speedy retrieval of the exact graphic you need.
 - -Indexed alphabetically by Graphic title.
 - -Cross-referenced by subject.
 - -Master listing.
- Vinyl pouch to hold Print Shop[™] reference cards.

5 Tab Sections:

- *"Print Shop™"*—for your Print Shop™ documentation.
- "Companion"—for your Companion documentation.
- "Graphics"—Graphic Index and Graphic Cross-Reference Guide.
- "Custom"—A place to save your custom graphics and special creations.
- "Disks"—Vinyl diskette holders for easy access and a sturdy pouch to hold your original graphic reference cards.

CONNECTIONS

5221 Central Avenue, Suite 205 Richmond, CA 94804